



الرياضيات

الصف الثاني عشر

للضلعين
الأدبي، والفندقي والسياحي

المهنة الثانية عشر / الأديب زرف 1

(الرياضيات)

إجابات تدريبات وأسئلة

الوحدة الأولى

النزاهات والاتصال

الفصل الأول: نهاية الاقتران عند نقطة .

أولاً : مفهوم النهاية

تدريب (1)

(1) $\lim_{x \rightarrow 3} x = 3$ غير معرف عند $x=3$

(2) $\lim_{x \rightarrow 3} (x-3) = 0$
 $3 \leftarrow x$

(3) $\lim_{x \rightarrow 3} (x+3) = 6$
 $3 \leftarrow x$

(4) $\lim_{x \rightarrow 3} (x^2) = 9$
 $3 \leftarrow x$

تدريب (2)

(1) $\lim_{x \rightarrow 1} (x-1) = 0$
 $1 \leftarrow x$

(2) $\lim_{x \rightarrow 1} (x+1) = 2$ غير موجودة
 $1 \leftarrow x$

(3) $\lim_{x \rightarrow 1} (x^2) = 1$
 $1 \leftarrow x$

تدريب (3)

(1) $\lim_{x \rightarrow 1} (x-1) = 0$
 $1 \leftarrow x$

(2) $\lim_{x \rightarrow 1} (x+1) = 2$ غير موجودة
 $1 \leftarrow x$

الاسئلة

(1) $\lim_{x \rightarrow 2} (x-2) = 0$ غير معرف عند $x=2$

(2) $\lim_{x \rightarrow 2} (x+2) = 4$
 $2 \leftarrow x$

(3) $\lim_{x \rightarrow 2} (x^2) = 4$

(4) $\lim_{x \rightarrow 2} (x-2)^2 = 0$
 $2 \leftarrow x$

(5) $\lim_{x \rightarrow 2} (x^2+1) = 5$
 $2 \leftarrow x$

(6) $\lim_{x \rightarrow 2} (x^2-1) = 3$
 $2 \leftarrow x$

(7) $\lim_{x \rightarrow 2} (x^2-4) = 0$
 $2 \leftarrow x$

(8) $\lim_{x \rightarrow 2} (x^2+4) = 8$ غير موجودة
 $2 \leftarrow x$

(9) $\lim_{x \rightarrow 2} (x^2-2) = 2$
 $2 \leftarrow x$

(10) $\lim_{x \rightarrow 2} (x^2+2) = 6$
 $2 \leftarrow x$

(11) $\lim_{x \rightarrow 2} (x^2-3) = 1$

حلول

ثانياً : نظريات الزوايا

تدريب (1)

$$1) \text{ زايا } (1) = (9 + 5 - 4 + 5 - 2) = 13$$

$$2) \text{ زايا } (2) = (10 + 5 - 7) = 8$$

$$3) \text{ زايا } (3) = (5 + 5) = 10$$

تدريب (2)

$$9 = \text{زايا } (4) \leftarrow 0 = (3 - 3 + 5) = 5$$

$$343 = \text{زايا } (5) = 3 \times (5) = 15$$

تدريب (3)

$$7 = \text{زايا } (6)$$

$$0 = (2) = 2$$

$$10 = \text{زايا } (7)$$

$$14 = \text{زايا } (8)$$

$$10 = \text{زايا } (9)$$

$$11 = \text{زايا } (10)$$

$$13 = \text{زايا } (11)$$

تدريب (4)

$$1 = 0 \leftarrow 17 = 7 + 0, 9 \leftarrow 17 = \text{زايا } (12)$$

$$\text{زايا } (13) = \text{زايا } (14) \leftarrow \text{زايا } (15) = \text{زايا } (16) + 1$$

$$1 = P - 0$$

$$\boxed{P = 1}$$

$$\text{زايا } (17) = \text{زايا } (18) + P$$

$$\boxed{7 = P} \leftarrow 20 = 20$$

جواب

الأسئلة

(ج) - 17

(ب) 15

(أ) 28

(د) 17

(س) 21

(أ) - 17

(ز) 20

(و) - 7

(ج) 1

(د) 8

(ب) 79

$$\binom{17}{r} = \binom{17}{17-r} = \binom{10}{r} + \binom{10}{17-r} \leftarrow \binom{10}{r} = \binom{10}{r} + \binom{10}{10-r}$$

$$\binom{25}{1} = \binom{25}{25} = 1 + 25 + \binom{25}{2} + \dots + \binom{25}{24} + \binom{25}{25} = 2 \times 25 = 50$$

$$\binom{7}{r} = \binom{7}{7-r}$$

$$\binom{6}{r} = \binom{6}{6-r}$$

$$\binom{7}{0} = 1, \binom{7}{1} = 7, \binom{7}{2} = 21, \binom{7}{3} = 35, \binom{7}{4} = 35, \binom{7}{5} = 21, \binom{7}{6} = 7, \binom{7}{7} = 1$$

(أ) 8

(ب) 10

(ب) 7

$$\boxed{17=19} \iff P + 4 \times 0 = 4 + P \iff \binom{17}{r} = \binom{17}{17-r}$$

(س) 20

(ج) 21

(ب) غير موجودة

(أ) 1

$$\boxed{15=19} \iff 1 = P - 7 \iff \binom{15}{r} = \binom{15}{15-r}$$

ثالثاً: نلاحظ خارج قسمة اقلنا

تدريب (1)

$$(1) \text{ نلاحظ } = \frac{2x-5}{7} = \frac{5-5}{0+7} \quad 1 \leftarrow 5$$

$$(2) \text{ نلاحظ } = \frac{1}{0} = \frac{2-2}{2+5} \quad 2 \leftarrow 5$$

$$(3) \text{ نلاحظ } = \frac{2+5}{2-5} \text{ غير موجود}$$

$$(4) \text{ نلاحظ } = \frac{1-5}{2+5} \quad 2 \leftarrow 5$$

تدريب (2)

$$(1) \text{ نلاحظ } = \frac{2+5}{2+5} = \frac{2+5}{2+5} \quad 2 \leftarrow 5$$

$$(2) \text{ نلاحظ } = \frac{2-5}{(2-5) \cdot 0} = \frac{2-5}{11-5} \quad 2 \leftarrow 5$$

$$(3) \text{ نلاحظ } = \frac{(9+2-5)(2+5)}{2+5} = \frac{2+5}{2+5} \quad 2 \leftarrow 5$$

$$(4) \text{ نلاحظ } = \frac{(2-5)(2-5)}{(2+5)(2-5)} = \frac{9+2-5}{9-5} \quad 2 \leftarrow 5$$

ع

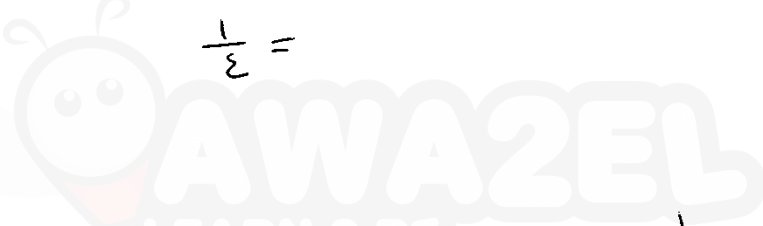
توريث ٣

$$(1) \text{ نزل } \frac{0 + \sqrt{r_1 + r_2}}{0 + \sqrt{r_1 + r_2}} \times \frac{10 - r_2}{0 - \sqrt{r_1 + r_2}} =$$

$$٣. = \frac{(0 + \sqrt{r_1 + r_2})(0 - r_2)}{0 - r_2} =$$

$$(2) \text{ نزل } \frac{r_2 - r_1}{(r_1 + \sqrt{r_1 + r_2})(r_2 - r_1)} = \frac{r_2 + \sqrt{r_1 + r_2}}{r_2 + \sqrt{r_1 + r_2}} \times \frac{r_2 - \sqrt{r_1 + r_2}}{r_2 - r_1} =$$

$$\frac{1}{2} =$$



توريث (٤)

$$\frac{1}{9} = \frac{r_2 - r_1}{(1 + r_2)(r_2 - r_1)} \text{ نزل } = \frac{\frac{1}{3} - \frac{1}{1 + r_2}}{r_2 - r_1}$$

الكل - حلة

- | | |
|----------------------|---------------------|
| (ب) غير موجودة | (١) $\frac{1}{3}$ P |
| (ج) $\frac{0}{3}$ | (٢) $\frac{1}{8}$ P |
| (د) $\frac{1}{7}$ | (٣) ٣ |
| (هـ) $\frac{1}{0.1}$ | (٤) ٣ |

$$7- (ز) \text{ نزل } \frac{(r_2 + r_1)(r_2 - r_1)}{r_2 + r_1} = \frac{9 - r_2}{r_2 + r_1} \text{ نزل } = \frac{(9) - (r_2)}{r_2 + r_1}$$

$$(ح) \text{ نزل } \frac{(r_2) - (r_2 + r_1)}{r_2 + r_1 + (r_2) - r_2} =$$

ص

$$\frac{\frac{1}{r-v} - \frac{1}{r+v+v}}{0} = \frac{(v) - (v+v)}{0} \quad \text{نزل } \frac{1}{0}$$

$$\frac{1}{r-v} =$$

$$\frac{(1-v)(r+v)}{(1+v)(1-v)} = \frac{r-v+v}{1-v} \quad \text{نزل } \frac{1}{1-v}$$

$$\frac{r}{v} =$$



٦

إدارة المناهج والكتب المدرسية

زائجاً : زنايته اقتران الجذ - لتوي
تدريب (أ)

$$28 = (x) + \sqrt{(x) - (x)}$$

تدريب (ب)

(أ) ٣ (ب) ١ (ج) ٣ (د) ٤

(هـ) غير موجودة (و) غير موجودة

السئلة

(أ) ٤ - ٤

(ب) غير موجودة

(ج) ١٧

(د) ٤

(هـ) (٢) ١٧

(و) ٢٣

(ز) ١٧

(ح) غير موجودة

٧
١٧

الفضل الثاني: الاتصال
 أولاً: الاتصال عند نقطة

تدريب (1)
 (P) مقل عند $s=1$ (U) مقل عند $s=1$ (J) غير مقل عند $s=2$

تدريب (2)

م (2) = ϵ

$$f = \frac{(2-s) \cdot \frac{1}{2-s}}{2-s} = \frac{1}{2-s}$$

اذن $f(1) = \frac{1}{2-1} = 1$ $f(2) = \frac{1}{2-2} = \infty$ \Rightarrow غير مقل عند $s=2$

تدريب (3)

$$(1) \quad f(1) = \frac{1}{2-1} = 1$$

$$+ \frac{1}{2-2} = \infty$$

$$\boxed{q=p} \leftarrow 7 + p \cdot 2 = 15$$

$$\boxed{\epsilon=p} \leftarrow v = 3 + p \leftarrow (1) \quad f(1) = \frac{1}{2-1} = 1$$

$$- \frac{1}{2-2} = \infty$$

$$\boxed{7=u} \leftarrow v = u \leftarrow v = \frac{1}{2-1} = 1$$

$$+ \frac{1}{2-2} = \infty$$

ص

النتيجة

$$(1) \quad 1 = 1, \quad 3 = 1$$

$$(2) \quad \text{غير متصل عند } 1 = 1$$

$$(3) \quad \text{غير متصل عند } 1 = 1$$

$$(4) \quad (P) \text{ متصل عند } 1 = 1 \quad (B) \text{ غير متصل عند } 1 = 1$$

$$(5) \quad \text{زنا } 1 = (1) = (2) \leftarrow 1 = 1$$

$$(6) \quad \text{زنا } 1 = (1) = (2) \leftarrow 1 = 1$$

$$\text{زنا } 1 = (1) = (2) \leftarrow 1 = 1$$

$$(7) \quad 1 = 1, \quad 3 = 1$$

$$(8) \quad \text{بما } 1 = \text{متصل عند } 1 = 1 \quad \text{زنا } 1 = (1) = (2)$$

$$\text{بما } 1 = (1) + (2) = 1 \leftarrow \text{زنا } 1 = (1) = 1$$

$$\text{بما } 1 = (1) = 1$$

م

ثانياً: نظريات الاتصال

تدريب (1)

م: كثير موجود مقل عند $s=3$

$$f(s) = (s-2)^2 (s+3) \quad \leftarrow \text{م: مقل عند } s=2$$

اذن $(s-2)^2 (s+3)$ مقل عند $s=3$

تدريب (2)

م: مقل عند $s=1$ ، م: غير مقل عند $s=1$

$$\left. \begin{array}{l} 1-s \geq 0, (s+1)(s+2) \\ 1-s < 0, (s-2)(s+2) \end{array} \right\} = (s) (s+1) = (s) f(s)$$

$$\text{اذن م: مقل عند } s=1 \quad \left. \begin{array}{l} f(s) \neq (s) f(s) \\ +1-s \\ -1-s \end{array} \right\}$$

تدريب (3)

(4) لا يوجد نقاط عدم اتصال

$$(5) \quad 3-2=1$$

$$(6) \quad 1=1$$

من

المسألة

- (1) ل (س) مقل عند $2 = 3$
(2) م مقلان عند $1 = 3$ ← ل مقل عند $3 = 1$
(3) م مقل عند $3 = 0$ ، م غير مقل عند $0 = 0$
تفضل نظريات الانعكاس

$$\left. \begin{array}{l} 0 > 3, \quad \frac{3+3-}{0+3} \\ 0 < 3, \quad \frac{3-3}{0+3} \end{array} \right\} = (3) (0 \times 3)$$

$$\text{لذا } (0 \times 3) (3) \neq (3) (0 \times 3)$$

$$+0 < 3 \quad -0 < 3$$

اذن 0×3 م غير مقل عند $0 = 0$

(4) لا ، امثلة متعددة .

(5) (أ) لا يوجد (ب) 3 ، 3 (ج) 1 ، 1 (د) 3

(6) ل غير مقل عند $2 = 3$

من الـ

أ مثلة العجدة

(ب) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$
 $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(1) $P = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(ج) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ غير موجودة

(د) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$
 $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(هـ) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(ب) $\frac{0}{7}$

(2) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(و) $\frac{3}{14}$

(هـ) $\frac{1}{8}$

(5) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(6) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(7) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(8) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(9) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(3) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(5) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(1) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(6) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

(4) $\Gamma = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

ص ١٤

الوحدة الثانية

التفاضل

□ متوسط التغير
تدريب:

$$(1) \quad \frac{1}{v} = \frac{0}{30} = \frac{1-7}{30} = \frac{17-37}{30} = \frac{(1)س - (37)س}{1-37} = \frac{45}{\Delta}$$

$$(2) \quad \frac{CG}{c} = \frac{3-5\Delta}{c} = \frac{(0-3) - (2+4\Delta)}{c} = \frac{(2)س - (4)س}{2-4} = \frac{45}{\Delta}$$

$$(3) \quad \frac{45}{\Delta} = \frac{45}{\Delta}$$

$$(4) \quad 2 = \frac{7}{3} = \frac{1 - (1+3 \times 2)}{3} = \frac{(1)س - (3)س}{-3} = \frac{45}{\Delta}$$

تدريب: الميل = $\frac{(1)س - (3)س}{-3} = \frac{145-205}{145-205}$

$$24 = \frac{45}{3} = \frac{-3(3)1}{3}$$

تدريب: $\frac{(0 + (1-1)س) - 1 + (2)س}{3} = \frac{(1)س - (2)س}{1-2} = \frac{45}{\Delta}$

$$\frac{0 + (1-1)س - 1 + (2)س}{3} =$$

$$\frac{0+1}{3} + \frac{(1-1)س - (2)س}{3} =$$

$$0 + 7 = \frac{10}{3} + (3-1)س =$$

تدريب: مقدار التغير في الربح = 3000 - 3400 = 1400

متوسط الربح السنوي = مقدار التغير في الربح / التغير في الزمن

$$1400 = \frac{1400}{3-1} =$$

①

السؤال

(أ) $\Gamma = \Gamma - \epsilon = 0 \Rightarrow \Delta$

$$\frac{{}^c(\Gamma) - ({}^c\Gamma) - ({}^c\epsilon) - ({}^c\epsilon)}{\Gamma} = \frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$$

$$\Gamma = \frac{\Gamma - \epsilon}{\Gamma} = \frac{\Gamma - \epsilon - \Gamma}{\Gamma} = \frac{(\epsilon - \Gamma) - 1\Gamma - 1\Gamma}{\Gamma} =$$

(ب) $\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$

$$\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$$

$$\Gamma = \frac{\Gamma - 11}{\Gamma} =$$

$10 - 10 = 0 \Rightarrow \Delta$

$1 = 10 \leftarrow \Gamma - 10 = 1 -$

(ج) $\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$

$$\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$$

$$\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$$

$$\Gamma - 1 = \Gamma - 1 = \Gamma - 1 =$$

(د) $\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$

$$\frac{\epsilon}{\Gamma} \rho_0 = 1 \Gamma \leftarrow \frac{\epsilon}{\Gamma} \rho_0 = 1 \Gamma$$

$$17 = \rho_0$$

$$\frac{17}{0} = \rho$$

(هـ) $\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$

$$\frac{({}^c\Gamma) - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma - \Gamma} = \frac{0}{0} \Delta$$

$$\frac{1 + ({}^c\Gamma) - 1 - ({}^c\epsilon) - ({}^c\Gamma) - ({}^c\epsilon)}{\Gamma} =$$

$$\frac{1 + \Gamma - 1 - \epsilon - \Gamma - \epsilon}{\Gamma} = \frac{0}{\Gamma} =$$

$$\Gamma = 1 - \epsilon = \frac{\Gamma - \epsilon}{\Gamma} + \epsilon =$$

(3)

إدارة المناهج والكتب المدرسية

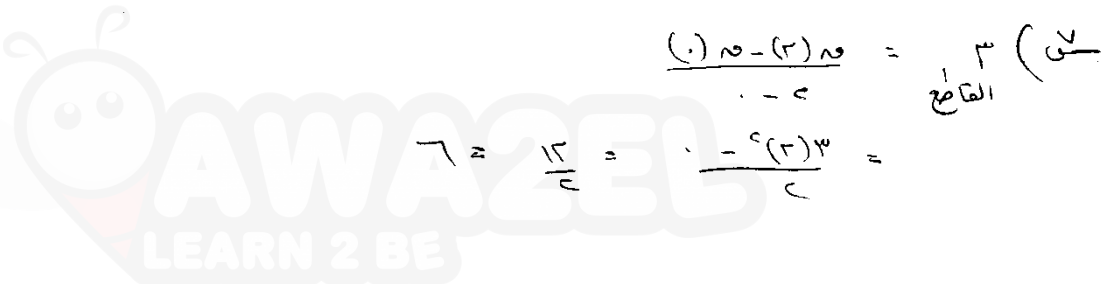
$$\frac{7 - (3)^2}{0 - 3} = \frac{7 - 9}{-3} = \frac{-2}{-3} = \frac{2}{3} \quad (\text{ج})$$

القاسم

$$\frac{7 - (3)^2}{3} = \frac{7 - 9}{3} = \frac{-2}{3}$$

$$\frac{7 - (3)^2}{7 +} = \frac{7 - 9}{7 +} = \frac{-2}{7 +}$$

$$1 = (3)^2$$



$$\frac{(.)^2 - (2)^2}{0 - 4} = \frac{0 - 4}{-4} = \frac{-4}{-4} = 1$$

القاسم

$$7 = \frac{12}{2} = \frac{1 - (2)^2}{2} = \frac{1 - 4}{2} = \frac{-3}{2}$$

$$57 = 1 - 54 \quad 2 \quad \frac{1 - (3)^2}{1 - 3} = \frac{1 - 9}{-2} = \frac{-8}{-2} = 4$$

(د)

$$\frac{(0 - 1.0) - (2(3)0 - (3)1.0)}{1 - 3} = \frac{0 - 1.0 - (0 - 3.0)}{1 - 3} = \frac{0 - 1.0 - 0 + 3.0}{-2} = \frac{2.0}{-2} = -1$$

(هـ)

المسئلة التالفة :

تدريب ١ : قده (٢) = هذا $\frac{(٢)٨ - (٥)٨}{٢ - ٥}$

= هذا $\frac{(١ + ٣) - ٥ - ٤ + ٣}{٢ - ٥}$

= هذا $\frac{١ - ٥ - ٤}{٢ - ٥}$ = هذا $\frac{١١ - ٥ - ٤ + ٣}{٢ - ٥}$

$\frac{١ - ٥ - ٤}{٢ - ٥} = \frac{(٢ - ٥)٤}{٢ - ٥}$ = هذا

تدريب ٢ : قده (٣) = هذا $\frac{(٣)٨ - (٥)٨}{٣ - ٥}$

= هذا $\frac{(٣ - ٩ \times ٤) - (٣ - ٥ - ٤)}{٣ - ٥}$

= هذا $\frac{٣٣ - ٣ - ٥ - ٤}{٣ - ٥}$ = هذا $\frac{٣٦ - ٥ - ٤}{٣ - ٥}$

= هذا $\frac{(٣ + ٥)(٣ - ٥)}{٣ - ٥}$ = هذا $\frac{٦ \times ٤}{٣ - ٥}$

تدريب ٣ : قده (٥) = هذا $\frac{(٥)٨ - (٤)٨}{٥ - ٤}$

= هذا $\frac{٣ - ٤ - ٣}{٥ - ٤}$

= هذا $\frac{(٤ - ٥)(٤ + ٥ + ٤ + ٣ + ٢)}{٤ - ٥}$

$\frac{٢ - ٣}{٥ - ٤}$

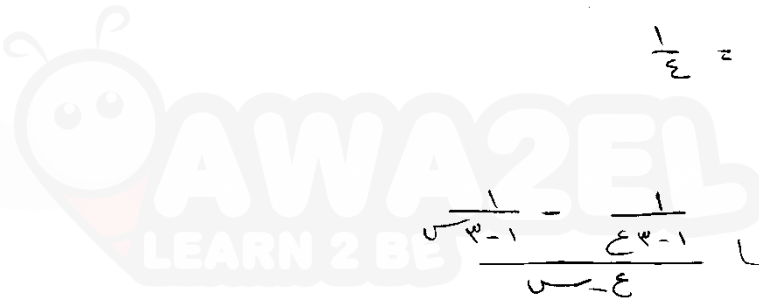
تدریج : قدر (س) = $\frac{\sqrt{2v} - \sqrt{2v}}{s - e} \times \frac{\sqrt{2v} + \sqrt{2v}}{\sqrt{2v} + \sqrt{2v}}$

= $\frac{s - 2 - \sqrt{2v}}{(s - e)(\sqrt{2v} + \sqrt{2v})}$

$\frac{1}{\sqrt{2v}} = z$

= $\frac{(s - e) \sqrt{2v}}{\sqrt{2v} \times (\sqrt{2v} + \sqrt{2v})}$

قدر (ا) = $\frac{1}{16v} = z$



تدریج : قدر (س) = $\frac{\frac{1}{\sqrt{3-1}} - \frac{1}{e-1}}{s - e}$

= $\frac{e^3 + 1 - s^3 - 1}{(s - e)(\sqrt{3-1})(e^3 - 1)}$ = $\frac{(e^3 - 1) - (s^3 - 1)}{(s - e)(\sqrt{3-1})(e^3 - 1)}$

= $\frac{e^3 - s^3}{(s - e)(\sqrt{3-1})(e^3 - 1)}$

قدر (ب) = $\frac{e^3 - s^3}{\frac{1}{2}} = \frac{e^3 - s^3}{\left(\frac{1}{2}\right)} = \frac{e^3 - s^3}{\left(\frac{1}{2} - 1\right)} = \left(\frac{1}{2}\right)$

الأسئلة:

$$(1) \quad \frac{2x^2 - 5x - 2}{x} = \frac{2x^2}{x} - \frac{5x}{x} - \frac{2}{x}$$

$$= \frac{(2x^2 - 5x - 2)}{x}$$

$$= 2x - 5 - \frac{2}{x}$$

$$(2) \quad \frac{5x^2}{x} = \frac{5x^2}{x}$$

$$= \frac{5x^2 + 0x + 0}{x}$$

$$= \frac{(5x^2 + 0x + 0)}{x}$$

$$(3) \quad \frac{(x^2 - 7x + 6) - (x^2 - 7x + 6)}{x - 6} = \frac{0}{x - 6}$$

$$= \frac{0}{x - 6} = 0$$

$$(4) \quad \frac{(x^2 - 5x + 6) - (x^2 - 5x + 6)}{x - 6} = \frac{0}{x - 6}$$

$$= \frac{0}{x - 6} = 0$$

$$(5) \quad \frac{(x^2 - 5x + 6) - (x^2 - 5x + 6)}{x - 6} + \frac{(x^2 - 5x + 6) - (x^2 - 5x + 6)}{x - 6} = \frac{0}{x - 6} + \frac{0}{x - 6}$$

$$= \frac{0 + 0}{x - 6} = \frac{0}{x - 6} = 0$$

$$= 0$$

٦

$$\frac{\sqrt{3+u} \sqrt{3-u} + \sqrt{3-4u} \sqrt{3+4u}}{\sqrt{3+u} \sqrt{3-u} + \sqrt{3-4u} \sqrt{3+4u}} \times \frac{\sqrt{3+u} \sqrt{3-u} - \sqrt{3-4u} \sqrt{3+4u}}{u-4} \quad \text{قوة (3) ضلنا}$$

$$\frac{\cancel{3} \sqrt{u-4} - \cancel{3} \sqrt{4-4u}}{\sqrt{3+u} \sqrt{3-u} \times (u-4)} \quad \text{ضلنا}$$

$$\frac{1}{\sqrt{3+u} \sqrt{3-u}} = \left(\frac{\cancel{u-4}}{\sqrt{3+u} \sqrt{3-u} \times (u-4)} \right) \quad \text{ضلنا}$$

$$\left(\frac{1}{\sqrt{3+u} \sqrt{3-u}} - \frac{1}{\sqrt{3+u} \sqrt{3-u}} \right) \quad \text{قوة (3) ضلنا}$$

$$\frac{1}{\sqrt{3+u} \sqrt{3-u}} = \frac{(\cancel{3-u}) \sqrt{3-u}}{(u-4) \sqrt{3-u} \sqrt{3-u}} \quad \text{ضلنا}$$

$$\frac{(\sqrt{3-u} - u \sqrt{3-u})}{(u-4) \sqrt{3-u} \sqrt{3-u}} \quad \text{ضلنا}$$

$$\frac{1}{\sqrt{3+u} \sqrt{3-u}} =$$

$$\frac{\frac{1}{\sqrt{3+u} \sqrt{3-u}} - \frac{1}{\sqrt{3+u} \sqrt{3-u}}}{u-4} \quad \text{قوة (3) ضلنا}$$

$$\frac{1}{\sqrt{3+u} \sqrt{3-u}} = \frac{(\cancel{3-u}) \sqrt{3-u}}{(u-4) \sqrt{3-u} \sqrt{3-u}} \quad \text{ضلنا}$$

$$\frac{\sqrt{3-4u} \sqrt{3+4u} - \sqrt{3+u} \sqrt{3-u}}{(u-4) \sqrt{3+u} \sqrt{3-u} \sqrt{3+4u} \sqrt{3+4u}} \quad \text{ضلنا}$$

$$\frac{4-u}{\sqrt{3+u} \sqrt{3-u}} =$$

$$\frac{(r-1)w - (u-1)w}{r+u} \lim_{r \leftarrow u} = (r-1)w (0 \leftarrow u)$$

$$3 = \frac{(0) - 7 + u - 3}{r+u} \lim_{r \leftarrow u} =$$

$$\frac{(e)w - (u-1)w}{e-u} \lim_{e \leftarrow u} = (e)w (u)$$

$$\frac{(17-1) - 5u - 1}{e-u} \lim_{e \leftarrow u} =$$

$$1 - z = \frac{(u+2)(u-2)}{e-u} \lim_{e \leftarrow u} = \frac{5u - 17}{e-u} \lim_{e \leftarrow u} =$$

$$\frac{e - e + u - 0 - 5 - 7}{-u} \lim_{e \leftarrow u} = (0)w (u)$$

$$0 - z = \frac{(0 - 5u - 7)}{u} \lim_{u \leftarrow u} =$$

$$\frac{\sqrt{1+u} + \sqrt{3-u}}{1 + \sqrt{3-u}} \times \frac{\sqrt{1+u} - \sqrt{3-u}}{r+u} \lim_{r \leftarrow u} = (r-1)w (s)$$

$$\frac{7 - \sqrt{3}}{(r+u)17} \lim_{r \leftarrow u} = \frac{1 - u - 3 - 7}{(r+u)17} \lim_{r \leftarrow u} =$$

$$\frac{3}{17} = \frac{(r+u)3 -}{(r+u)17} \lim_{r \leftarrow u} =$$

$$\frac{r + \sqrt{r-7}}{(e-u)(1-u)3} \lim_{e \leftarrow u} = \frac{\frac{r}{3} - \frac{r}{1-u}}{e-u} \lim_{e \leftarrow u} = (e)w (e)$$

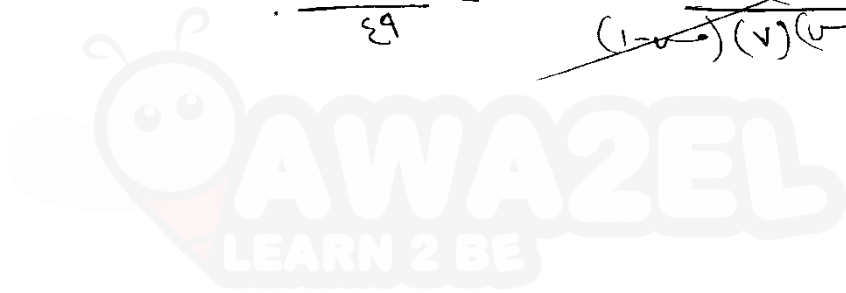
$$\frac{r-}{9} = \frac{(u-2)r}{(e-u)(1-u)3} \lim_{e \leftarrow u} = \frac{u - r - 1}{(e-u)(1-u)3} \lim_{e \leftarrow u} =$$

٩

$$\frac{\frac{10}{\sqrt{2}} - \frac{10}{\sqrt{2+4}}}{1-\sqrt{2}} \quad \text{قوة (1) هنا} \quad \leftarrow \sqrt{2}$$

$$\frac{10 - 10}{(1-\sqrt{2})(\sqrt{2})(\sqrt{2+4})} \quad \text{هنا} \quad \leftarrow \sqrt{2} \quad \frac{10 - 10 - 10 - 10}{(1-\sqrt{2})(\sqrt{2})(\sqrt{2+4})} \quad \leftarrow \sqrt{2}$$

$$\frac{10 - 10}{\sqrt{2}} = \frac{\frac{10 - 10}{\sqrt{2}}}{(1-\sqrt{2})(\sqrt{2})(\sqrt{2+4})} \quad \text{هنا} \quad \leftarrow \sqrt{2}$$



٩

قواعد التفاضل :-

تدريب 1:

$$(1) \text{ قـ } (x^2 - 2) = \frac{2x}{2} = x$$

$$(2) \text{ قـ } = \frac{1}{x^2} = x^{-2} \\ \frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$$

$$(3) \text{ قـ } = \frac{1}{x^3} = x^{-3} \\ \frac{d}{dx} x^{-3} = -3x^{-4} = -\frac{3}{x^4}$$

$$(4) = \frac{1}{x^5} = x^{-5} \\ \frac{d}{dx} x^{-5} = -5x^{-6} = -\frac{5}{x^6}$$

تدريب 2:

$$(1) \frac{1}{x^2} + 2 = \frac{1}{x^2} + \frac{2x^2}{x^2} = \frac{1+2x^2}{x^2}$$

$$(2) \text{ قـ } (x^2 - 1) = 2x - 0 = 2x$$

تدريب 3:

$$(1) \text{ قـ } = (x^2 + 3) + (x^2 - 5) \times (4 + x - 3) = (x^2 + 3) + (x^2 - 5)(x + 1)$$

$$(2) \text{ قـ } (x^2 - 3) = 2x - 0 = 2x$$

$$\text{قـ } (1) = 2x - 0 + 1 \times (x^2 - 3) = 2x + x^2 - 3$$

$$10 - 2x = 2x + x^2 - 3$$

$$9 = x^2$$

$$(3) \text{ قـ } = (x^2 - 7) + 5 \times (x^2 - 3) = \frac{1}{x^2} + \frac{5x^2}{x^2} = \frac{1+5x^2}{x^2}$$

$$\frac{(1-u)(0+u^2) - \Gamma X (u-w)}{c(u-w)} = \frac{0.05}{0.15} \quad (1)$$

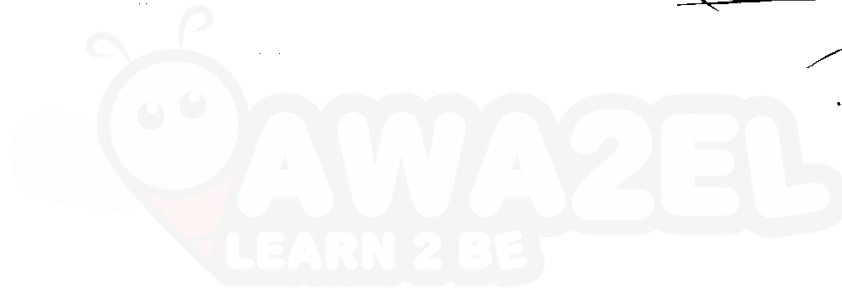
$$\frac{11}{c(u-w)} = \frac{0+u^2 + u^2\Gamma - \Gamma}{c(u-w)} =$$

$$\frac{(2+u\Gamma+u^2)(\Gamma-u)}{\Gamma-u} = 0.33 \quad (2)$$

$$\Gamma + u\Gamma = \frac{0.33}{0.15}$$

$$\frac{\Gamma}{u} = \frac{0.33}{0.15} \quad (3)$$

$$\frac{u-w}{\Gamma+u} = \frac{0.05}{0.15} \quad (4)$$



تكملة مسائل

ط (أ) $\frac{1}{s^2} = \frac{1}{s(s)} = \frac{A}{s} + \frac{B}{s}$

ط (ب) $\frac{1}{s^2} = \frac{A}{s} + \frac{B}{s}$

ط (ج) $1 + \frac{1}{s} = \frac{1}{s} + \frac{1}{s} + \frac{1}{s} = \frac{3}{s}$

ط (د) $(s-1)(s-2) = (s-1)(s-2)$

ط (هـ) $\frac{s^2 - 3s + 2}{(s-1)(s-2)} = \frac{(s-1)(s-2)}{(s-1)(s-2)} = 1$

ط (و) $\frac{s^2 - 3s + 2}{(s-1)(s-2)}$

ط (ز) $\frac{s^2 - 3s + 2}{(s-1)(s-2)}$

ط (ح) $\frac{s^2 - 3s + 2}{(s-1)(s-2)}$

ط (ط) $(s+1)(s-2) + (s-3)(s-1)$

ط (ي) $\frac{1}{s^2} = \frac{1}{s} + \frac{1}{s}$

ط (ك) $1 = \frac{1}{s} + \frac{1}{s} = \frac{2}{s}$

ط (ل) $\frac{1}{s^2} = \frac{1}{s} + \frac{1}{s}$

ط (م) $\frac{1}{s^2} = \frac{1}{s} + \frac{1}{s}$

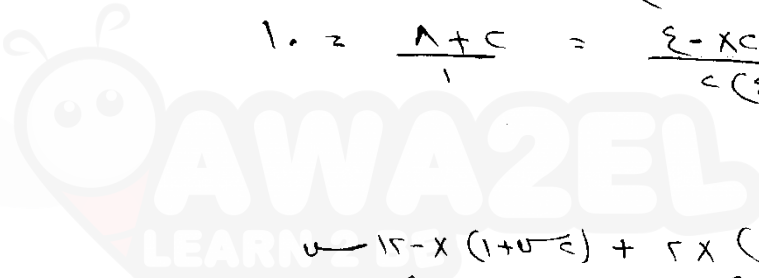
٤

$$\frac{3}{c(s-1)} = \frac{1-x(3-)-}{c(s-1)} = \text{فد (ج)}$$

$$\frac{3}{16} = \frac{3}{c(4)} = \frac{\text{فد (ج)}}{c=4}$$

$$\text{فد (د) } \frac{(s-1)(s-2) - 2x(s-0)}{c(s-4-0)}$$

$$1 = \frac{A+C}{1} = \frac{4-xc - cx1}{c(4-0)} = \text{فد (د)}$$



$$\text{فد (هـ) } \frac{12-x(1+s-2) + 2x(s-4-2)}{c(s-4-0)}$$

$$\text{فد (هـ) } \frac{(3-12-x(1+(3-2)c) + cx(4x7-4))}{c(s-4-0)}$$

$$34x(1+2-)+cx(22-4) =$$

$$34x3- + 2x2- =$$

$$112- = 2\sqrt{2} - 4- =$$

$$\text{فد (و) } \frac{2-}{c} = \frac{2x(s-3) + s-2-x(s-2)}{c(s-4-0)}$$

$$\text{فد (و) } \frac{2-}{c} = \frac{2x(1-3) + 2-xc}{c(s-4-0)}$$

$$2- = cx + 2- =$$

$$2- =$$

$$\frac{1}{c(s-1)} = \frac{1}{c} = \text{فد (ز) } \frac{1}{c} = \text{فد (ز)}$$

$$\frac{1}{7} = \text{فد (ح)}$$

١٤

$$(1) \bar{a} \times (1) \bar{a} + (1) \bar{a} \times (1) \bar{a} = (P) \text{ (ع)} \quad (1)$$

$$\bar{a} - X \bar{a} + 1 \times \bar{a} =$$

$$\Lambda = \bar{a} + \bar{a} =$$

$$(1) \bar{a} \times (1) \bar{a} = (1) \bar{a} \times (1) \bar{a} = (1) \bar{a} \times (1) \bar{a} \quad (2)$$

$$\text{مكرر} =$$

$$\frac{(1) \bar{a} \times (1) \bar{a} - (1) \bar{a} \times (1) \bar{a}}{c((1) \bar{a})} = (1) \bar{a} \left(\frac{1 \bar{a}}{\bar{a}} \right) \quad (3)$$

$$\text{مكرر} = \frac{\bar{a} - \bar{a}}{\bar{a}} = \frac{1 \times \bar{a} - \bar{a} \times 1}{c(\bar{a})} =$$

$$\frac{\bar{a}}{\bar{a}} = \frac{1 \times \bar{a}}{c(\bar{a})} = \frac{(1) \bar{a} \times \bar{a}}{c((1) \bar{a})} = (1) \bar{a} \left(\frac{1 \bar{a}}{\bar{a}} \right) \quad (4)$$

$$(1) \bar{a} + (1) \bar{a} = (1) \bar{a} (1 + 1) \quad (5)$$

$$1 = 1 + 1 =$$

$$(1) \bar{a} \bar{a} - (1) \bar{a} \bar{a} = (1) \bar{a} \bar{a} (1 - 1) \quad (6)$$

$$\Lambda = \bar{a} \bar{a} - \bar{a} \bar{a} = 1 \times \bar{a} \bar{a} - \bar{a} \bar{a} \times 1 =$$

قاعدة السلسلة

$$u - \varepsilon = 2 \frac{\varepsilon S}{u - S}$$

تدريب 1: $3 + \varepsilon T = \frac{ops}{\varepsilon S}$

$$\frac{\varepsilon S}{u - S} \times \frac{ops}{\varepsilon S} = \frac{ops}{u - S}$$

$$1 = \varepsilon \quad , \quad 1 = u -$$

$$u - \varepsilon - X(3 + \varepsilon T) =$$

$$T_0 - = \varepsilon - X_0 = \varepsilon - X(3 + T) = \frac{ops}{u - S}$$

تدريب 2: $(\varepsilon + u - T)^{3-} (0 + u - \varepsilon + u -) T_0 = \frac{ops}{u - S}$

تدريب 3: $\frac{1 - u - T}{3 + u - \varepsilon - u - \sqrt{T}} = \frac{ops}{u - S}$

$$\frac{1}{4} (u - T) = u - T$$

$$\frac{1 -}{\varepsilon (u - c)^{3-}} = 1 - X^{\frac{c-}{3-}} (u - c) \frac{1}{4} = \frac{ops}{u - S}$$

تدريب 4: $u - T X^{7-} (0 + u - 3) 0 - = 2(u -)$

$$\frac{u - 3 -}{7(0 + u - 3)} =$$

(10)

$$c_{u-15} = \frac{c_s}{u-s}$$

$$\frac{1}{1+\epsilon v c} = \frac{ops}{c_s} \quad (P) \quad (d)$$

$$\frac{c_s}{u-s} \times \frac{ops}{c_s} = \frac{ops}{u-s}$$

$$\frac{c_{u-7}}{1-u-\epsilon v} = c_{u-7} \times \frac{1}{1+\epsilon v c} =$$

$$\lambda = \frac{ds}{u-s}$$

$$c_{jw} = \frac{ops}{j-s} \quad (u)$$

$$\frac{ds}{u-s} \times \frac{ops}{j-s} = \frac{ops}{u-s}$$

$$r = u$$

$$17 = d$$

$$c_{jce} = \lambda \times c_{jw} =$$

$$c_{(17-)} ce =$$

$$(c_{07}) ce =$$

$$71 \epsilon \epsilon =$$

$$\frac{u-c}{1+\epsilon v c} = \frac{u-\epsilon}{1+\epsilon v c} = \frac{ops}{ops} \quad (P) \quad (d)$$

$$\frac{u-7-}{\epsilon(c_{u+3})} = u-c \times \epsilon^{-1} (c_{u+3}) w - = (u) w \quad (u)$$

$$c_{(4u-\epsilon)} 1c = \epsilon \times c_{(1+u-\epsilon)} w = (u) w \quad (d)$$

$$u-\epsilon - x(c_{u-0-0}) + u-10-x(c_{u-0-0}) \times \epsilon^{-1} u = (u) w \quad (e)$$

$$(u-1\epsilon-1)(u-0-9) + 0-x(c_{u-4+u}) = w \quad (e)$$

(13)

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (أ)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ب)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ج)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (د)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (هـ)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (و)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ز)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ح)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ط)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ق)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ك)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ل)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (م)}$$

$$\frac{9-x}{\sqrt{x+5}} = \frac{9-x}{\sqrt{x+5}} \quad \text{ق (ن)}$$

مسئلة الاقترانات المثلثة

تدريب 1: $\Gamma + \alpha + \frac{\alpha\Gamma - \alpha^2}{\alpha} = \Gamma + \alpha + \frac{\alpha\Gamma - \alpha^2}{\alpha} = \frac{\alpha\Gamma}{\alpha}$

(2) $\alpha\Gamma + \alpha\Gamma - \alpha^2 = \frac{\alpha\Gamma}{\alpha}$

(3) $\alpha\Gamma + \alpha\Gamma - \alpha^2 = \frac{\alpha\Gamma}{\alpha}$

(4) $\alpha\Gamma + \alpha\Gamma - \alpha^2 = \frac{\alpha\Gamma}{\alpha}$

تدريب 2: $\alpha\Gamma = \frac{\alpha\Gamma}{\alpha}$

(5) $\alpha\Gamma - \alpha^2 + \alpha\Gamma - \alpha^2 = \frac{\alpha\Gamma}{\alpha}$

تدريب 3: $\alpha\Gamma = \frac{\alpha\Gamma}{\alpha}$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (أ)$$

$$\frac{x^2 + x + 1}{x^2 + x + 1} = \frac{1}{x^2 + x + 1} \quad (ب)$$

$$\frac{1}{x^2 + x + 1} = \frac{1}{x^2 + x + 1} = \frac{1}{x^2 + x + 1} = \frac{1}{x^2 + x + 1}$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (ج)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (د)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (هـ)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (و)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (ز)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (ح)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (ط)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (ي)$$

$$x^2 + x + 1 = \frac{1}{x^2 + x + 1} \quad (ك)$$

(19)

المستحقان العلياء

تدريب (1) ${}^3P_2 = 3 \times 2 = 6$ - ${}^3P_1 = 3$

${}^3P_0 = 1$ - ${}^3P_3 = 6$

(2) ${}^3P_1 = 3$

${}^3P_2 = 6$

(3) ${}^3P_0 = 1$

$$\frac{1.}{3} = \frac{3 \times 2 \times 1}{3} = 1$$

$$\frac{1.}{3 \times 2} = \frac{1}{6}$$

تدريب (2) : ${}^4P_3 = 4 \times 3 \times 2 = 24$ - ${}^4P_2 = 12$

${}^4P_1 = 4$ - ${}^4P_4 = 24$

${}^4P_0 = 1$ - ${}^4P_3 = 24$

${}^4P_2 = 12$ - ${}^4P_1 = 4$

${}^4P_0 = 1$

$$\Lambda = \frac{\varepsilon - X \Gamma - z(u-1)}{(u-1)}$$

$$\Gamma \varepsilon = \frac{\varepsilon - X(u-1) \Gamma X \Lambda - z(u-1)}{\varepsilon(u-1)}$$

$$\Gamma \varepsilon = z(1)$$

$$z(u-1) \Gamma + (1-u) \Gamma = \frac{\varepsilon - X(u-1) \Gamma X \Lambda - z(u-1)}{\varepsilon(u-1)}$$

$$z X (u-1) \Gamma + (1-u) \Gamma = X(1-u) \Gamma + z(u-1)$$

$$z X (u-1) \Gamma + (1-u) \Gamma = X(1-u) \Gamma + z(u-1)$$

$$u \Gamma - u - P \Gamma = z(u-1)$$

$$\Gamma = z(u-1) \leftarrow \varepsilon = u \Gamma \leftarrow \varepsilon = z(1)$$

$$u - P \Gamma = z(u-1)$$

$$\Gamma = P \leftarrow P \Gamma = z \Gamma \leftarrow z \Gamma = z(1)$$

$$u \Gamma - u - P \Gamma = z(u-1)$$

$$u \Gamma - (P) \Gamma = z(u-1)$$

$$u \Gamma - P \Gamma = z(u-1)$$

$$u - u \Gamma - u - P \Gamma = z(u-1)$$

$$-X(\Gamma = u \Gamma - P \Gamma) = z(1)$$

$$\Gamma = z(u-1) + P \Gamma$$

$$1.0 = z(u-1) + P \Gamma$$

$$\Gamma = z(u-1) + P \Gamma$$

$$z \Gamma = z(u-1) + P \Gamma$$

$$z \Gamma = z(u-1) + P \Gamma$$

إدارة المناهج والكتب المدرسية

$$\begin{aligned} \text{قوة } \Gamma &= (u) \text{ قوة } \Gamma \\ \text{قوة } \Sigma &= (u) \text{ قوة } \Sigma \end{aligned}$$

$$\begin{aligned} \text{قوة } \Gamma + \text{قوة } \Sigma &= (u) \text{ قوة } \Gamma + (u) \text{ قوة } \Sigma \\ \text{قوة } \Gamma &= \end{aligned}$$

$$\text{قوة } \Gamma + \text{قوة } \Sigma = (u) \text{ قوة } \Gamma + \text{قوة } \Sigma$$

$$\text{قوة } \Gamma + \text{قوة } \Sigma + \text{قوة } \Gamma + \text{قوة } \Sigma = (u) \text{ قوة } \Gamma + \text{قوة } \Sigma$$

$$\text{قوة } \Gamma + \text{قوة } \Sigma + \text{قوة } \Gamma + \text{قوة } \Sigma = \dots$$

3

أسئلة الوحدة :-

$$(1) \frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma}$$

$$\frac{P_0 - P_2}{\Sigma} = 1 - \frac{1}{\Sigma}$$

$$\frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{1 - c} = \frac{P_0 - P_2}{1 - c}$$

$$(1) \frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma}$$

$$P_0 - P_2 = 1 - \frac{P_0 - P_2}{\Sigma} = 1 - \frac{P_0 - P_2}{\Sigma}$$

$$P_2 = 1 - P_0$$

$$1 = P_0$$

$$(1) \frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma}$$

$$\frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma}$$

$$\frac{P_0 - P_2}{\Sigma} = \frac{P_0 - P_2}{\Sigma}$$

$$P_0 - P_2 = 1 - P_0$$

$$(P_0 - P_2) = 1 - P_0$$

$$P_0 = 1 - P_2$$

$$P_2 = 1 - P_0$$

(24)

$$P(u) = u - \epsilon$$

$$\frac{(r)u - (\epsilon)u}{r - \epsilon} = \frac{u\Delta}{u\Delta} (u)$$

$$P = \frac{1 - \epsilon}{r}$$

$$\frac{u + \epsilon - \epsilon}{u - \epsilon} = \frac{u}{u - \epsilon} \quad P(u) = \frac{u}{u - \epsilon}$$

$$0 = \frac{(u - \epsilon)0 - 1}{u - \epsilon} = \frac{-1}{u - \epsilon}$$

$$x - \epsilon = \frac{x + \epsilon}{u - \epsilon} \quad P(u) = \frac{x + \epsilon}{u - \epsilon}$$

$$\left(\frac{(u + \epsilon)(u - \epsilon)}{u - \epsilon} \right) \frac{1}{u - \epsilon} = \frac{1}{u - \epsilon}$$

$$u - \epsilon = (u - \epsilon) \frac{1}{u - \epsilon}$$

$$\frac{1}{r + u} = \frac{1}{r + \epsilon} \quad P(u) = \frac{1}{r + \epsilon}$$

$$1 = \frac{r + \epsilon - r + u}{(r + u)(u - \epsilon)(r + \epsilon)} \quad P(u) = \frac{r + \epsilon - r + u}{(r + u)(u - \epsilon)(r + \epsilon)}$$

$$\frac{1}{\epsilon + u\sqrt{c}} = \frac{r}{\epsilon + u\sqrt{c}} \quad P(u) = \frac{r}{\epsilon + u\sqrt{c}}$$

$$\epsilon - u\sqrt{c} = (u) \quad P(u) = \epsilon - u\sqrt{c}$$

(76)

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (1)$$

$$1 = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (2)$$

$$\frac{u - \frac{1}{2}u^3}{\sqrt{1-u^2}} = \frac{u(1 - \frac{1}{2}u^2)}{\sqrt{1-u^2}} = \frac{u(1-u^2)}{\sqrt{1-u^2}} \quad (3)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (4)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (5)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (6)$$

$$\frac{u - \frac{1}{2}u^3}{\sqrt{1-u^2}} = \frac{u(1 - \frac{1}{2}u^2)}{\sqrt{1-u^2}} = \frac{u(1-u^2)}{\sqrt{1-u^2}} \quad (7)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (8)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (9)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (10)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (11)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (12)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (13)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (14)$$

$$\frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} = \frac{1}{\sqrt{1-u^2}} \quad (15)$$

(15)

إدارة المناهج والكتب المدرسية

$$\frac{u - \lambda - X^3}{u - \lambda - X^3 + \epsilon} = \frac{0.95}{0.95} \quad (9)$$

$$u - cX(u - \epsilon - \lambda) + \epsilon - X(\lambda + \epsilon) = (u - \lambda) \quad (10)$$

$$u - \lambda - u - \lambda + \lambda - \epsilon - \epsilon =$$

$$\lambda - u - \lambda + \epsilon - \epsilon =$$

$$\lambda + u - \lambda - \epsilon - \epsilon = (u - \lambda) \quad (11)$$

$$cX^2(1 - u - c) = (u - \lambda) \quad (12)$$

$$X^2(1 - u - c) = 1.0 =$$

$$X^2(1 - u - c) = 1.0 = cX^2(1 - u - c) \quad (13)$$

$$u - \lambda = u - \lambda - X^3 + u - \lambda - X^3 + (u - \lambda) \quad (14)$$

$$u - \lambda - X^3 - X^3 + cX(u - \lambda) + u - \lambda - X^3 + u - \lambda - X^3 = (u - \lambda) \quad (15)$$

$$u - \lambda - X^3 - X^3 + u - \lambda - X^3 + u - \lambda - X^3 - X^3 =$$

$$u - \lambda - X^3 - X^3 + u - \lambda - X^3 - X^3 =$$

$$0.95^2(1 - u - c) = (u - \lambda) \quad (16)$$

$$0.95^2 = 0.95^2(1 - u - c) = 0.95^2(1 - u - c) \quad (17)$$

(17)

إدارة المناهج والكتب المدرسية

$$\begin{aligned} \text{الحل:} & \text{قوة (ص) } z(u) = \frac{1 + u - P\Gamma - \sqrt{1 - 4u + 4P\Gamma - 4P^2}}{2} \\ & \text{قوة (س) } z(u) = \frac{P\Gamma - \sqrt{1 - 4u + 4P\Gamma - 4P^2}}{2} \\ & \cdot \leq P\Gamma - 1\Gamma \leftarrow \cdot z(1-) \\ & \Gamma = P \end{aligned}$$

$$\begin{aligned} \text{الحل:} & \text{قوة (ص) } z(u) = \frac{P \times (1-u-P)}{(1-u-P)P} \\ & \text{قوة (س) } z(u) = \frac{P}{(1-u-P)} \end{aligned}$$

$$\begin{aligned} & \text{قوة (ص) } z(u) = \frac{P \times (1-u-P)}{(1-u-P)P} \\ & \text{قوة (س) } z(u) = \frac{P}{(1-u-P)} \end{aligned}$$

$$\begin{aligned} \text{قوة (ص) } z(u) & \leftarrow \frac{P}{(1-u-P)} = \frac{P}{1-P} \leftarrow \frac{P}{1-P} z(0) \\ \Gamma = P & \\ \Gamma = P & \end{aligned}$$

$$\begin{aligned} \text{الحل:} & \text{قوة (ص) } z(u) = \frac{\Gamma \times (1-u-\Gamma)}{\Gamma(1-u-\Gamma)} \\ & \text{قوة (س) } z(u) = \frac{\Gamma}{\Gamma(1-u-\Gamma)} \\ & = \frac{1}{1-u-\Gamma} \end{aligned}$$

$$\begin{aligned} & \text{قوة (ص) } z(u) = \frac{\Gamma \times (1-u-\Gamma)}{\Gamma(1-u-\Gamma)} \\ & \text{قوة (س) } z(u) = \frac{\Gamma}{\Gamma(1-u-\Gamma)} \\ & \frac{(1-\sqrt{c})}{c} \frac{\Gamma}{\Gamma} = \frac{1}{1-\sqrt{c}} \end{aligned}$$

$$\frac{\Gamma}{\Gamma} \frac{1-\sqrt{c}}{c} = 1 \leftarrow (1-\sqrt{c})\Gamma = 1$$

$$\Gamma = \frac{1}{1-\sqrt{c}}$$

$$\frac{\Gamma}{1-\sqrt{c}} = 1$$

(38)

$$\frac{1}{\sqrt{7+u-v}} \times (u) \delta + (u) \delta \times \sqrt{7+u-v} = (u) \delta \quad (P) \left(\frac{u}{\sqrt{7+u-v}}\right)$$

$$\frac{1}{\sqrt{\varepsilon}} \times (r-) \delta + (r-) \delta \times \sqrt{\varepsilon} = (r-) \delta$$

$$\frac{N}{\varepsilon} = \frac{1}{\varepsilon} + \varepsilon = \frac{1}{\varepsilon} \times 1 + \varepsilon \times \varepsilon =$$

$$\left(\frac{1 \times (u) \delta - (u) \delta \times u}{u} \right) - (u) \delta = (u) \delta$$

$$\left(\frac{(r-) \delta - (r-) \delta \times r-}{\varepsilon} \right) - (r-) \delta = (r-) \delta$$

$$\left(\frac{1 - \varepsilon -}{\varepsilon} \right) - \varepsilon = \left(\frac{1 - r- \times r-}{\varepsilon} \right) - r- =$$

$$\frac{r-}{\varepsilon} = \frac{0}{\varepsilon} - r- =$$

$$(r-) \delta \quad (r)$$

$$(r) \delta \quad (r)$$

$$\left(\frac{1-}{\varepsilon} \right) \cup (\varepsilon)$$

$$(u - \sqrt{u} \sqrt{u}) \cup (u)$$

$$(c) \delta \quad (r)$$

$$(r) \delta \quad (r)$$

$$(r-) \delta \quad (r)$$

$$(r) \delta \quad (r)$$

$$(r) \delta \quad (r)$$

CA

إدارة المناهج والكتب المدرسية

المضاد الأول: التقدير الهندسي والعلاقات للثمن
الوحدة الثالثة / تطبيقات لتفاضل

أولاً: التقدير الهندسي:

تدريب (أ)

$$\text{و (أ)} = 3 - 2 = 1$$

$$\text{و (ب)} = 3 - 2 = 1$$

$$\text{و (ج)} = 3 - 2 = 1 \text{ ميل على المحاور}$$

تدريب (ب)

$$\text{و (أ)} = (1 + 2) = 3$$

$$\text{و (ب)} = 3 \times (1 + 2) = 9$$

$$\text{و (ج)} = (1) \times 3 = 3 \text{ ميل على المحاور}$$

نقطة التقاطع (1، 1) ← و (1) = (1 + 1) = 2

نقطة التقاطع (2، 1)

$$3 - 2 = 1 \text{ ميل على المحاور}$$

$$3 - 2 = 1 \text{ ميل على المحاور}$$

الذميلة:

$$1) \text{ و (أ)} = 3 + 2 = 5$$

$$\text{و (ب)} = 3 = (3) \text{ ميل على المحاور}$$

(3، 1) ← نقطة التقاطع (3، 1)

$$3 - 2 = 1 \text{ ميل على المحاور}$$

$$\text{و (أ)} = 3 + 2 = 5$$

$$3 = 3$$

$$\text{و (ب)} = 3 + 2 = 5$$

$$\text{و (ج)} = 3 = (3) \text{ ميل على المحاور}$$

نقطة التقاطع (1، 1) ← و (1) = (3، 1)

$$3 - 2 = 1 \text{ ميل على المحاور}$$

III

إدارة المناهج والكتب المدرسية

$$\rightarrow \text{أ) } (1+s) = (2-s) \quad s=1$$

$$\text{و' (2) } (1+s) + (2-s) = (2)$$

$$\text{و' (3) } = 2 \times 1 + 1 \times 2 = 4$$

$$\text{نقطة التقاطع } (2, 1) = (1, 2)$$

$$ص = 2 = 4 + ص$$

$$ص = 4 + ص$$

$$\text{ب) } (1+s) = \frac{2+3s}{1+s} \quad s=1$$

$$\text{و' (2) } = \frac{(2+3s) - (2)(1+s)}{(1+s)}$$

$$\text{و' (1) } = \frac{2 \times 2 - 2 \times 1}{2} = \frac{2}{2} = 1$$

$$\text{نقطة التقاطع } (1, 1) \leftarrow (1, 1)$$

$$ص = 1 = (1-s)$$

$$\text{ج) } (1+s) = 3 - s \quad s=3$$

$$\text{و' (2) } = 3 + 3s$$

$$\text{و' (3) } = 3 = 3 + 3s$$

$$3 = 3 \leftarrow 1 = 3s$$

$$\text{د) } (1+s) = 4 + s \quad s=0$$

$$\text{و' (2) } = 4 + 2s$$

$$\text{و' (1) } = 4 = 4 + 0 = 4$$

$$\text{هـ) } (1+s) = (3-s) \quad s=1$$

$$\text{و' (2) } = (3-s) \times 2 = 6 - 2s$$

$$\text{و' (1) } = 6 - 2 \times 1 = 4$$

$$\text{نقطة التقاطع } (1, 1) \leftarrow (1, 1)$$

$$ص = 1 = 4 - 2(1+s)$$

□

ثانياً: التغير المتناهي

تدريسه (١)

$$\text{ف (ن) } 3 + 03 - {}^c n 3 = (n)$$

$$\text{ع (ن) } 3 - 06 = (n) \text{ ف (ن) } 3 - 06 = (n)$$

$$\text{ع (٢) } 9 = 3 - (٢) 6 = (٢) ٩$$

$$\text{تدريسه (٢) ف (ن) } 6 + {}^c n 4 + {}^3 n 2 = (n)$$

$$\text{ع (ن) } 8 + {}^c n 6 = (n) \text{ ف (ن) } 8 + {}^c n 6 = (n)$$

$$\text{ت (ن) } 8 + 012 = (n) \text{ ع (ن) } 8 + 012 = (n)$$

$$\text{ت (٢) } 12 = 8 + 4 = 8 + (٢) 4 = (٢) 12$$

تدريسه (٣)

$$\text{ف (ن) } 3 + {}^c n 3 - {}^2 n 2 = (n)$$

$$\text{ع (ن) } 6 - {}^c n 6 = (n) \text{ ف (ن) } 6 - {}^c n 6 = (n)$$

$$\text{ت (ن) } 6 - 012 = (n) \text{ ع (ن) } 6 - 012 = (n)$$

$$\therefore 6 = (n)$$

$$\therefore 6 = 6 - 012$$

$$\frac{1}{6} = n$$

$$\text{ع (} \frac{1}{6} \text{) } 6 - {}^c n 6 = (\frac{1}{6})$$

$$(\frac{1}{6}) 6 - {}^c (\frac{1}{6}) 6$$

$$\text{ت (} \frac{1}{6} \text{) } \frac{1}{6} \times 6 - \frac{1}{6} \times 6 = \frac{1}{6} - \frac{1}{6} = 0$$

البدلة:

$$\text{(١) ف (ن) } {}^c n 3 + {}^3 n = (n)$$

$$\text{(٢) ع (ن) } 6 + {}^c n 3 = (n)$$

$$\text{ع (٢) } 6 + (٢) 3 = (٢) 6 = 12$$

$$\text{(٣) ت (ن) } 6 + 06 = (n)$$

$$\text{ع (ن) } 9 = 6 + {}^c n 3 \leftarrow 9 = (n)$$

$$\therefore 9 = 3 - 06 + {}^c n$$

$$\therefore = (1-n)(3+n)$$

$$1 = n \quad \boxed{3 = n}$$

$$\text{ت (١) } 6 + (1) 6 = (1) 12$$

٣

$$(2) \text{ فن } (n) = {}^c n r = {}^c n 2$$

$$\text{ع } (n) = {}^c n 4$$

$$\text{ع } (3) = (3) 4 = 12 \text{ ان سرقة الخطية}$$

$$\text{السرعة المتوسطة} = \frac{\text{ف (ب) - ف (ا)}}{n - m}$$

$$12 = \frac{\text{ف } (4) - \text{ف } (3)}{n - 3}$$

$$\frac{{}^c n 4 - {}^c n 2}{n - 3} = 12$$

$$\therefore (4 - 2) {}^c n 2 = 12(n - 3)$$

$$2 = n \quad \boxed{n = 2}$$

$$n = 2$$

$$(3) \text{ فن } (n) = {}^c n 2 + {}^c n 3 = (n) 4$$

$$\text{ع } (n) = {}^c n 2 + {}^c n 3 = (n) 4$$

$$\text{ع } (4) = (4) 4 = 2 \times 3 \times 2 \times 3 = 2 \times 3 \times 2 \times 3 = 2 \times 3 \times 6 = 36$$

$$(4) \text{ فن } (n) = {}^c n 0 + {}^c n 3 = (n) 3$$

$$\text{ع } (n) = {}^c n 3 - {}^c n 2 = (n) 3$$

$$3 - n 2 = (n) 3$$

$$3 - n 2 = 4$$

$$\boxed{n = 1} \text{ مائيه}$$

$$\text{ع } (1) = (1) 3 - (1) 2 = 1$$

$$(5) \text{ فن } (n) = {}^c n 4 + {}^c n 5 = (n) 8$$

$$\text{ع } (n) = {}^c n 4 + {}^c n 5 = (n) 8$$

$$\text{ع } (3) = 4 \times 3 = 12 \text{ ان}$$

$$\text{السرعة المتوسطة} = \frac{\text{ف } (n) - \text{ف } (a)}{n - m}$$

$$\frac{8 - 4}{n - 3} = 12$$

$${}^c n 4 = n 8$$

$$\therefore n 4 - {}^c n 4 = n 8$$

$$\therefore n(4 - 4) = n 8$$

$$\therefore n = 8$$

ان = 8 جواب

2

$$\begin{aligned} (٦) \text{ فٺ } (٧) &= ٣٧٢ - ٤٧٦ + ٦ \\ \text{ع } (٧) &= ٦٧ - ٤ \\ \text{ع } (٤) &= ٦٤ - ٤ \\ \text{٢٤} &= ٤ - ٢٤ \end{aligned}$$



٥

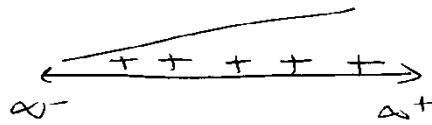
إدارة المناهج والكتب المدرسية

الفضل الثاني: تطبيقات الاستنتاجات

أولاً: التزايد صلتناقص

تدريب (1)

(1) و $(s) = s + 1$ و $(s)' = 1$



فتزايد $(-\infty, \infty)$

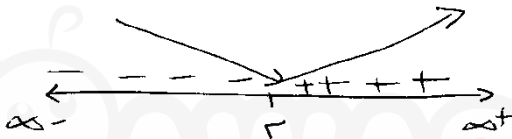
(2) و $(s) = (s - 2)^2$

و $(s)' = 2(s - 2)$

$\therefore (s - 2) = 0$

$s = 2$

$s = 2$



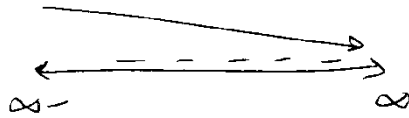
فتزايد $(-\infty, 2]$

فتناقص $[2, \infty)$

المسئلة:

(1) $-P$ و $(s) = s - 3 - 2$

و $(s)' = -1$



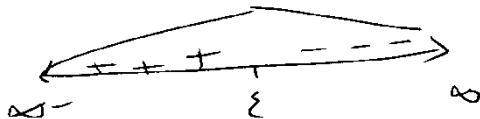
فتناقص $(-\infty, \infty)$

(2) و $(s) = s^2 - 8s - 5$

و $(s)' = 2s - 8$

$\therefore 2s - 8 = 0$

$s = 4$



فتزايد $(-\infty, 4)$ فتناقص $[4, \infty)$

(3) و $(s) = s^3 - 3s^2 + 2s$

و $(s)' = 3s^2 - 6s + 2$

$\therefore 3s^2 - 6s + 2 = 0$

$s = 1$ و $s = 2/3$



فتزايد $(-\infty, 2/3)$ و $(1, \infty)$

فتناقص $[2/3, 1]$

□

$$(> \text{ و } (s) = (s+2)(s+4)$$

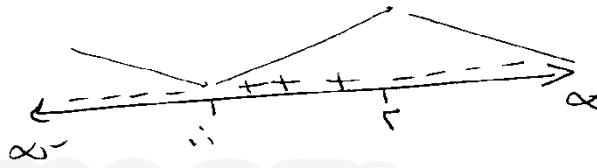
$$\therefore = 1 \times (s+2) + 1 \times (s+4) = (s)$$

$$\therefore = 0 + 2s$$

$$\frac{0}{2} = s$$



فترات $(-\infty, -\frac{0}{2}]$ ، $[\frac{0}{2}, \infty)$

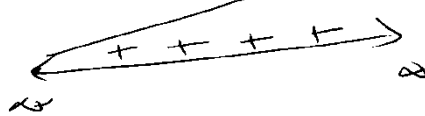


فترات $(-\infty, 2]$ ، $[2, 3]$ ، $[3, \infty)$

$$0 + s^2 + 3s = (s)$$

$$2 + s^2 + 3s = (s)$$

$$\therefore \text{جميع قيم } s < 2 + s^2 + 3s$$



فترات $(-\infty, \infty)$

$$\text{ع } (s) = (s) \text{ و } (s) \leftarrow (s) - (s) = \text{صفر}$$

$$(s) - (s) = \text{صفر}$$

$$(s) - (s) = \text{ثابت}$$

$$(s) - (s) = \text{ج}$$

$$(s) + (s) = \text{ج}$$

$$\text{حل آخرة نفرض } (s) + (s) = (s) + (s)$$

$$(s) - (s) = (s) + (s)$$

$$(s) - (s) = (s) + (s)$$

$$\therefore (s) = (s) \leftarrow (s) + (s)$$

$$(s) = \text{ثابت} = \text{ج}$$

$$(s) + (s) = \text{ج}$$

✓

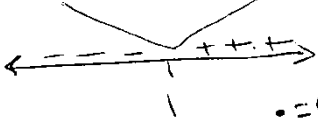
ثانياً : القيم العنقودية

تدريب (١)

$$f(s) = s^2 - 14s + 6$$

$$f'(s) = 2s - 14 = 0$$

$s = 1$ توجد قيمة حرجية عند $s = 1$



النقطة الحرجية (1, 119) = (1, 6)

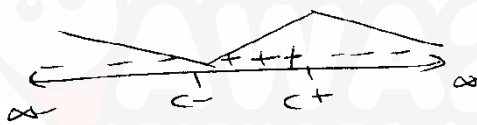
عند $s = 1$ يوجد قيمة صفري محلية = (1, 6)

$$f(s) = s^2 - 13s + 6$$

$$f'(s) = 2s - 13 = 0$$

$$f'(s) = 2s - 13 = 0 \Rightarrow s = 6.5$$

$$s = 6.5$$



(1) متناقص $(-\infty, 6.5]$ ، $[6.5, \infty)$ متزايد

(2) قيم s الحرجية عند $s = \{6.5, 6.5\}$

(3) $(6.5, 6.5) \leftarrow (6.5, 6.5)$ نقطة صفري محلية

$(6.5, 6.5) \leftarrow (6.5, 6.5)$ نقطة نظر محلية

تدريب (٢)

$$f(s) = s^3 - 5s^2 + 2$$

$$f'(s) = 3s^2 - 10s = 0$$

$$s = 0$$

$$f''(s) = 6s = 0$$

و $f''(s) = 6 < 0$ عند $s = 0$ و عند $s = 0$ صفري محلي و صفري و (1) = 2

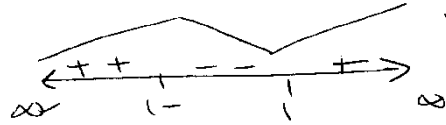
و $f''(s) = 6 > 0$ عند $s = 1$ نظر محلي و صفري و (1) = 4

المسألة :

$$(1) \quad p - q = (s) \quad \text{و} \quad s^2 - 3s + 1$$

$$\text{و} \quad (s) = s^2 - 3s + 1$$

$$s = 1 \quad \text{و} \quad s = 2$$



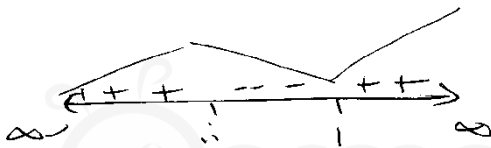
$$(1, -) \text{ ق (1-)} \leftarrow \text{عطف محليّة} \leftarrow (2, -)$$

$$(1, -) \text{ ق (1-)} \leftarrow \text{صفر محليّة} \leftarrow (1, -)$$

$$b - c = (s) \quad \text{و} \quad s^2 - 6s + 2$$

$$\text{و} \quad (s) = s^2 - 6s + 2$$

$$s = 1 \quad \text{و} \quad s = 5$$



$$(5, 0) \text{ ق (0)} \leftarrow \text{عطف محليّة} \leftarrow (2, 0)$$

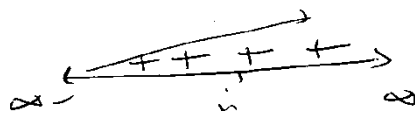
$$(1, -) \text{ ق (1-)} \leftarrow \text{صفر محليّة} \leftarrow (0, 1)$$

$$d - e = (s) \quad \text{و} \quad s^2 + 6$$

$$\text{و} \quad (s) = s^2 + 6$$

$$s = -2.45 \quad \text{و} \quad s = 2.45$$

لا توجد قيم صفرى



$$s - t = (s) \quad \text{و} \quad s^2 - 2s - 8$$

$$\text{و} \quad (s) = s^2 - 2s - 8$$

$$s = (s - 4)(s + 2)$$

$$s = 4 \quad \text{و} \quad s = -2$$



$$\left(\frac{4-}{3}, -\right) \text{ ق (1-)} \leftarrow \text{عطف محليّة} \leftarrow \left(\frac{4+}{3}, -\right)$$

$$(2, -) \text{ ق (2-)} \leftarrow \text{صفر محليّة} \leftarrow (2, -)$$

4

$$\begin{aligned}
 & \text{ج} \quad 2 - p = (s) \text{ و } 1 = s \Rightarrow s = 1 \\
 & \text{و } 1 = (s) \Rightarrow s = 1 \\
 & \text{و } 2 = (s) \Rightarrow s = 2 \\
 & \text{و } 1 = (s) \Rightarrow s = 1
 \end{aligned}$$

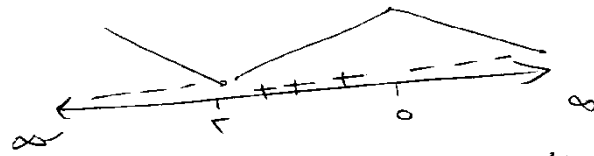
عند $s = 1$ ، صفه نظر ~~هو~~ و صيرها $1 = (0)$

$$\begin{aligned}
 & \text{د} \quad 4 - (s) = s + 2 \\
 & \text{و } 1 = (s) \Rightarrow s = 1 \\
 & \text{و } 2 = (s) \Rightarrow s = 2
 \end{aligned}$$

و $1 = (0) < 2$ ، عند $s = 1$ ، صفه نظر و صيرها $4 = (0)$

$$\begin{aligned}
 & \text{هـ} \quad 6 - (s) = s + 3 \\
 & \text{و } 1 = (s) \Rightarrow s = 1 \\
 & \text{و } 6 = s + 3 \Rightarrow s = 3 \\
 & 1 \neq s
 \end{aligned}$$

و $1 = (1) < 3$ ، عند $s = 1$ ، صفه نظر و صيرها $6 = (1)$ (3)
 و $1 = (1) > 3$ ، عند $s = 1$ ، صفه نظر و صيرها $6 = (1)$



أ) قيم المتغير $\{0, 2\}$

ب) فترات $(-\infty, 2]$ ، $(2, \infty)$ ، $[0, 2]$

ج) $(2, 3)$ و $(3, 4)$ نقطة صفه عليه
 $(0, 2)$ و $(2, 3)$ نقطة نظر عليه

$$\begin{aligned}
 & \text{د} \quad 4 - (s) = s + 2 - p \\
 & \text{و } 1 = (s) \Rightarrow s = 1 \\
 & \text{و } 1 = 2 - p \Rightarrow p = 1 \\
 & 1 = p
 \end{aligned}$$

□

الفصل الثالث : تطبيقات

أولاً : تطبيقات على القيم المقوى

تدريبي (أ)

العدد الأول = s

العدد الثاني = $2s$

$s + 2s = 3$

$s - 2s = 3$

$s + 2s = 3$

$s + (s - 2s) = 3$

$s + s - 2s = 3 - 1 \times (s - 2s)$

$s = 3 - 1 \times (s - 2s)$

$s = 1$



عند $s = 1$ أقل مجموع ممكن

العدد الثاني = $2s = 2$

$s = 1$

العدد (أ) 1. العدد (ب) 1.

تدريبي (ب)

المجموع = $s + 2s = 3$

$s \times 2s = 3$

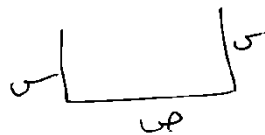
لكن $s - 2s = 3$

$s \times (s - 2s) = 3$

$s \times s - 2s^2 = 3$

$s^2 - 2s^2 = 3 - 1 \times (s - 2s)$

$s = 3 - 1 \times (s - 2s)$



عند $s = 3$ أكبر مساحة ممكنة

$s = 3 - 1 \times (s - 2s) = 3 - 1 \times (3 - 2 \times 3) = 3 - 1 \times (-3) = 3 + 3 = 6$

الانبعاد (3، 6)

المسئلة ٢

العدد ٣ = ص

(١) العدد ٦ = س

$$٦٠ = ص + س$$

$$ص = ٦٠ - س$$

$$٣ = س \times ص$$

$$٣ = (٦٠ - س)(ص)$$

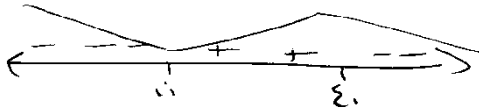
$$٣ = ٦٠ص - ص^2$$

$$ص^2 - ٦٠ص + ٣ = ٠$$

$$ص = \frac{٦٠ \pm \sqrt{٣٦٠٠ - ١٢}}{٢}$$

$$ص = \frac{٦٠ \pm \sqrt{٣٥٨٨}}{٢}$$

ترفض



عند ص = ٤٠ أكبر ما يمكن

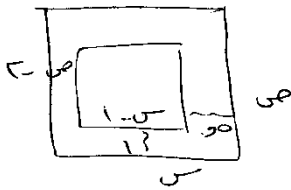
العدد ٦ = س

$$٦٠ = س$$

$$٦٠ = ص$$

$$٤٠ = ص$$

العددان



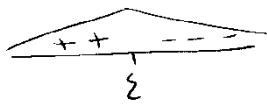
$$٣٢ = ص \times ص$$

$$\frac{٣٢}{ص} = ص$$

$$٣ = (٢ - ص)(١ - ص)$$

$$٣ = (٢ - \frac{٣٢}{ص}) \times (١ - ص)$$

$$ص = \frac{٣٢}{٢ - ص} + ٢ - ١ = ١٦$$



عند ص = ٤٠ أكبر ما يمكن

العدد ٦ = س

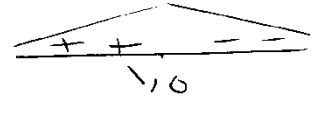
$$٦٠ = س$$

$$٦٠ = ص$$

(٣) المحيط = $5س + 5س + ٦ = ٦$
 $٥س - ٣ = ٥س$

كثافة الضوء = المساحة

$٣ = ٥س \times ٥س$
 $٣ = ٥س \times (٥س - ٣)$
 $٣ = ٥س \times ٥س - ٣$
 $٣ = ٥س - ٣ = ٥س$
 $١,٥ = ٥س$



عند $٥س = ١,٥$ المحرر كثافة مكثفة من الضوء

$٥س - ٣ = ٥س - ٣ = ١,٥$
 القاعد المتوازية (١,٥ و ٣)

(٤) حجم متوازي المستطيلات = ٢

$٢ = (٥س - ١,٥) \times (٥س - ١,٥) \times ٥س$
 $٢ = (٥س - ١,٥) \times ٥س$

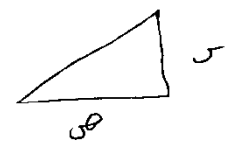
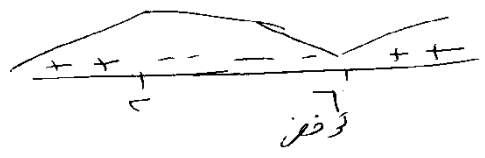
$٢ = (٥س - ١,٥) \times ٥س + ١,٥ \times ٥س - ١,٥ \times ٥س$

$٢ = (٥س - ١,٥) \times ٥س$

$٢ = ٥س - ١,٥$

عند $٥س = ٣,٥$

الحجم ممكن



(٥) $٣ = \frac{1}{2} \times \text{القاعد} \times \text{ارتفاع}$

$٣ = \frac{1}{2} \times ٥س \times ٥س$

$٤٠ = ٥س + ٥س$

$٥س - ٤٠ = ٥س$

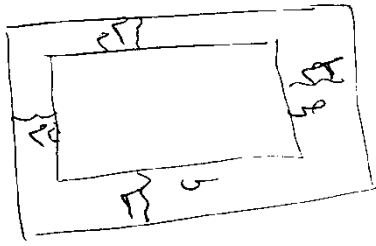
$٣ = \frac{1}{2} \times ٥س \times (٥س - ٤٠)$

$٣ = ٢,٥س - ١,٥س$

$٣ = ٢,٥س - ١,٥س$



س = ٢,٥ سم
 ٥س = ٤ سم
 ٥س = ٤ سم
 ٥س = ٤ سم



$$36 = 50 \times 5 \quad (7)$$

$$\frac{36}{5} = 50$$

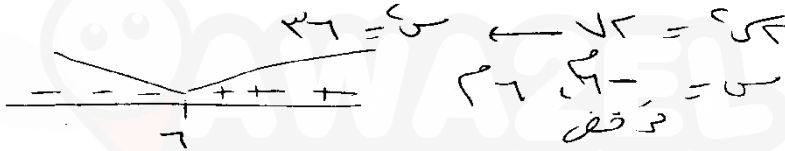
$$(5+3)(3+5) = 50$$

$$(5+\frac{36}{5})(3+5) = 50$$

$$50 = 1 \times (5+\frac{36}{5}) + (\frac{36}{5})(3+5) = 10$$

$$50 = 5 + \frac{36}{5} + \frac{180}{5} - \frac{36}{5}$$

$$2 = \frac{36}{5}$$



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عند $36 = 5$ اقل صافه ممكنه

$$36 = \frac{36}{1} = 50$$

فأينما : تطبيقات اقتصادية على التفاضل

تدريب (١)

الربح = الإيراد - التكاليف

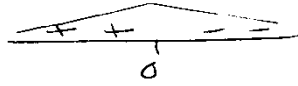
$$R(x) = (20x + 5x^2) - (x^3 + 3x^2 + 4x + 10)$$

$$R'(x) = (20 + 10x) - (3x^2 + 6x + 4)$$

$$R''(x) = 10 - 6x - 4$$

$$0 = 6x - 6$$

أكبر ربح ممكن



تدريب (٢)

$R(x) = 10x - (x^3)$

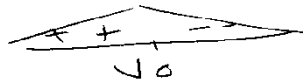
$$R(x) = (10x) - (x^3)$$

$$R'(x) = (10 - 3x^2)$$

$$R''(x) = -6x$$

$$0 = 10 - 3x^2$$

$$3x^2 = 10$$



أكبر ربح ممكن عندما يتبع $10/3$ حيزاً

الامثلة :

$$(1) \text{ الربح} = D(x) - L(x) = (20x + 5x^2) - (x^3 + 3x^2 + 4x + 10)$$

$$R'(x) = (20 + 10x) - (3x^2 + 6x + 4)$$

$$R''(x) = 10 - 6x - 4$$

(٢) $R(x) = D(x) - L(x)$

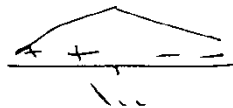
$$R(x) = 20x - (x^3 + 3x^2 + 4x + 10)$$

$$R'(x) = 20 - 3x^2 - 6x - 4$$

$$0 = 16 - 6x - 3x^2$$

$$3x^2 + 6x - 16 = 0$$

أكبر ربح ممكن عند $x = 10/3$



$$\begin{aligned} (3) \quad & \text{ر (س)} = \text{د (س)} - \text{ل (س)} \\ & \text{ر (س)} = (\text{س} - \text{س}) - (\text{س} + \text{س}) \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} \end{aligned}$$

$$\begin{aligned} (4) \quad & \text{ر (س)} = \text{د (س)} - \text{ل (س)} \\ & \text{ر (س)} = (\text{س} - \text{س}) - (\text{س} + \text{س} + \text{س} + \text{س}) \\ & \text{ر (س)} = (\text{س} - \text{س}) - (\text{س} + \text{س} + \text{س} + \text{س}) \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} - \text{س} - \text{س} \end{aligned}$$

ع = س
 د (س) = س
 ل (س) = س
 عند س = ع حفيه نظر
 ايجد ربع حاسب

$$\begin{aligned} (5) \quad & \text{ر (س)} = \text{د (س)} - \text{ل (س)} \\ & \text{ر (س)} = (\text{س} - \text{س}) - (\text{س} + \text{س} + \text{س} + \text{س}) \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} - \text{س} - \text{س} \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} - \text{س} - \text{س} \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} - \text{س} - \text{س} \end{aligned}$$

عند س = س ايجد ربع حاسب

$$\begin{aligned} (6) \quad & \text{ر (س)} = \text{د (س)} - \text{ل (س)} \\ & \text{ر (س)} = (\text{س} - \text{س}) - (\text{س} + \text{س} + \text{س} + \text{س}) \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} - \text{س} - \text{س} \\ & \text{ر (س)} = \text{س} - \text{س} - \text{س} - \text{س} - \text{س} - \text{س} \end{aligned}$$

اسئلة العدد ٥

(١) في (ن) $٣ + ١٢ - ٣٧٢ = (ن)$
 $٤٢ = ١٢ - ٣٧٦ = (ن)$
 $٥٤ = ٣٧٦$
 $٣ = ن \iff ٩ = ٣٧$

ن (ن) = ١٢
 ن (٣) = ٣٦

(٢) في (ن) $٣ = (١ - ن)$
 $(١ - ن) ٣ = (ن)$
 $(١ - ٤) ٣ = (٤)$
 $٣ = ٣ \iff ٣٦ = ١٢$



(٣) التكلفة = $٣٧٥٠ + ٣٧٥٠$

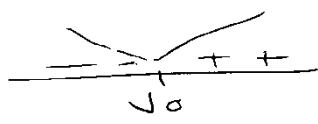
لكن $٣٧٥٠ \times ٥ = ١٨٧٥٠$
 $٣٧٥٠ \times ٥ = ١٨٧٥٠$
 $\frac{١٨٧٥٠}{٣٧٥٠} = ٥$

$٥٧٤ + ٥٦ = ١١٤٠$

$٥٧٤ + \frac{٣٧٥٠ \times ٦}{٣٧٥٠} = ١١٤٠$

$٥٧٤ + \frac{٢٢٥٠٠}{٣٧٥٠} = ١١٤٠$

$٥٧٤ + \frac{٢٢٥٠٠}{٣٧٥٠} = ١١٤٠$



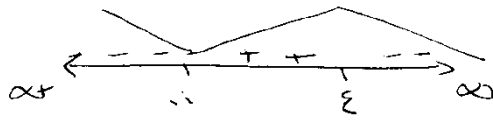
$٥٦٢٥ = ٣٧٥٠$
 $٣٧٥٠ = ٣٧٥٠$

اهل تكلفة عند ما تكون $٣٧٥٠ = ٣٧٥٠$

$٣٧٥٠ = \frac{٣٧٥٠}{٣٧٥٠}$

الاعداد الاخرى $٣٧٥٠, ٣٧٥٠$

$$\begin{aligned}
 (4) \quad & f(s) = 6s^3 - s^4 \\
 & f'(s) = 18s^2 - 4s^3 \\
 & f''(s) = 36s - 12s^2 \\
 & s = 0 \quad s = 3 \\
 & s = 0 \quad s = 3
 \end{aligned}$$



(P) متناقص، $(-\infty, 3]$ ، $[6, \infty)$
 متزايد $[3, 6]$

(د) $(3, 6)$ و $(0, 3)$ صفري تحليه \Rightarrow صفري تحليه
 $(6, \infty)$ و $(-\infty, 0)$ صفري تحليه \leftarrow صفري تحليه

$$\begin{aligned}
 (5) \quad & f(s) = 6s^3 - s^4 \\
 & f'(s) = 18s^2 - 4s^3 \\
 & f''(s) = 36s - 12s^2 \\
 & f'''(s) = 36 - 24s
 \end{aligned}$$

$$\begin{aligned}
 (6) \quad & (P) \quad f(s) = 6s^3 - 3s^4 + 5 \\
 & f'(s) = 18s^2 - 12s^3 \\
 & s = 0 \quad s = 3/2 \\
 & s = 0 \quad s = 3/2 \\
 & f''(s) = 36s - 36s^2 \\
 & f''(s) = 36s(1-s) \\
 & s = 0 \quad s = 1
 \end{aligned}$$

و $f''(s) = 36s - 36s^2 = 36s(1-s)$
 و $f''(s) = 36s(1-s) < 0$ عند $s = 1$ صفري و صفرياً و $f''(s) = 36s(1-s) > 0$ عند $s = 0$

و $f''(s) = 36s(1-s) > 0$ عند $s = 1$ صفري و صفرياً و $f''(s) = 36s(1-s) < 0$ عند $s = 0$

$$(7) \quad \sqrt{3} + \sqrt{3} = 2\sqrt{3} \quad \text{و} \quad (5) = \sqrt{3} - \sqrt{3} = 0$$

$$\text{و} \quad (6) = \sqrt{3} - 2 = \sqrt{3} - 2$$

$$17 = 5$$

$$\text{و} \quad (7) = 56$$

و $(1) = 56 = 56 < 7$ عند $s = 1$ صغرى و $(1) = 0$

و $(-1) = 56 > 7$ عند $s = -1$ اعظم و $(-1) = 4$

$$(8) \quad \text{و} \quad (5) = s(1-s^3)$$

$$\text{و} \quad (6) = s(1-s^3) + 3(1-s^3) = (1-s^3)(s+3)$$

$$(1-s^3)(s+3)$$

$$\text{و} \quad (1) = 5 \times 8 = 40 \quad \text{عند } s = 1$$

نقطة التماس $(1, 40) \leftarrow (1, 40)$

$$\text{معادلة التماس } 40 - 5s = 40 - 5(1-s) = 35 + 5s$$

$$(9) \quad \text{العدد الاولي } s = 5 \quad \text{العدد الثاني } = 40$$

$$0 = 40 + s$$

$$s \times s = 40$$

$$s(5-s) = 40$$

$$5s - s^2 = 40$$

$$s^2 - 5s + 40 = 0 \quad \leftarrow s = 5$$

$$s = 2$$

و $(2) = 40 > 5$ عند $s = 2$ اكبر

$$\text{العدد الثاني } = 40 = 5 - 0 = 5 = 5$$

$$(A) \quad \begin{aligned} 4 \quad & \text{ل} (س) = ٤٠ + ٣س \\ & \text{ل}' (س) = ٦ \\ & \text{ل} (٦) = ٦ \times ٦ = ٤٢ = ٤٠ + ٢ \end{aligned}$$

$$(١) \quad \begin{aligned} & ٣(٤ - ٥س) = (س) \\ & ٣ \times ٣(٤ - ٥س) = (س)' \\ & ٩(٤ - ٥س) = ٣٦ \\ & ٤ = (٤ - ٥س) \end{aligned}$$

$$\begin{aligned} ٢ &= ٤ - ٥س \\ ٦ &= ٥س \end{aligned}$$

$$\boxed{٢ = ٥}$$

$$\text{او } ٢ = ٤ - ٥س$$

$$\text{او } ٢ = ٥س$$

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$$(١١) \quad \begin{aligned} ١ - & \text{ل} (س) = ١٣ - ٥س \\ & \text{ل}' (٢) = ١٣ - ٥ \times ٦ = ١٣ - ٣٠ = -١٧ \\ & ٢ = ٥ \end{aligned}$$

الجواب $\boxed{٢}$

$$\begin{aligned} ٢ - & \text{ل} (س) = ٤ - (١ - ٣س) \\ & \text{ل}' (٣) = ١ - ٣ = -٢ \\ & ٣ = ٥ \end{aligned}$$

الجواب $\boxed{٣}$

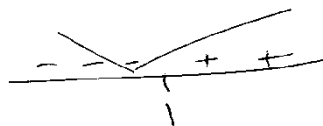
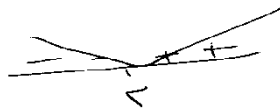
$$\begin{aligned} ٣ - & \text{ل} (س) = ٤ - ٥س \\ & ٢ = ٥ \end{aligned}$$

الجواب $\boxed{٣}$

$$\begin{aligned} ٤ - & \text{ل} (س) = ٢ - ٥س \\ & ١ = ٥ \end{aligned}$$

عندئذ $\boxed{١}$

الجواب $\boxed{١}$



$\boxed{٣}$

$$\begin{aligned} \text{٥-} & \text{ف (٧) = } ٧٦ - ٧٣ \\ & \text{ع (٧) = } ٧٣ - ١٢ \\ & \text{د (٧) = } ١٢ - ٦ \\ & \text{ز = } ٧ \end{aligned}$$

$$\begin{aligned} \text{ف (٢) = } & ٢٦ - ٢٤ \\ & \text{الجواب [ب]} \end{aligned}$$

$$\begin{aligned} \text{٦-} & \text{و (٥) = } ٥٣ - ٥٦ \\ & \text{و (١) = } ٦ - ٣ \\ & \text{ز = } ٥ \end{aligned}$$

$$\text{الجواب [د]}$$



٢١١