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The Hashemite University | Calculus I | Date 12 -11-2012

Department of Mathematics | Second Exam | Time: One Hour

اسم الطالب: [illegible] الرقم الجامعي: ١٣٣١٥٦٧ الرقم المتسلسل: ٢٥

وقت المحاضرة: 12—1 pm أسم المدرس: الآء محمد قدومي.

1	2	3	4	5	6	7	8	9	10	11	12
a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d

1) Let f and g be differentiable at x = 1, such that f(1) = 1, f'(1) = 2, g(1) = -2 and g'(1) = 4, then $\frac{d}{dx}(g(x)\sqrt{f(x)})\Big|_{x=1} =$

a) 5 b) 2 c) $-\frac{5}{2}$ d) $\frac{5}{2}$

2) If f(2) = 1, g(x) = ln(x³ + 1), and (gof)'(2) = 6, then f '(2) =

a) 7 b) –3 c) 4 d) 8

3) The equation of the tangent line to the curve

f(x) = $\sin^2 x - x\cos x^2 + 3$ at x = 0 is given by

a) y= x+3 b) y= x–3 c) y= –x–3 d) y= –x+3

4) The critical point(s) of $f(x) = x + \frac{4}{x}$ is (are)

a) 0 only b) –2 and 0 and 2 c) -2 and 2 d) 2 only

5) The values of k and m that make

$f(x) = \begin{cases} \frac{1}{x} + x & , x > 1 \\ kx - m & , x \leq 1 \end{cases}$ differentiable at x=1 are:

a) k=0, m= -2 b) k=0, m= 2

c) k=-1, m= 2 d) k=1, m= 2

6) $\lim_{x\to\infty} \left(\frac{x+2}{x+7}\right)^{-2x} =$

a) e^4 b) e^6 c) e^8 d) e^{10}

7) The value of (c) such that the line $y = -x - 4$, is tangent to the curve $y = c\sqrt{x}$

a) $c = -4$ b) $c = -2$ c) $c = 2$ d) $c = 4$

8) If $2x^2 + y^2 = 2$, then $\frac{d^2y}{dx^2} =$

a) $-\frac{4}{y^3}$ b) $\frac{4}{y^3}$ c) $-\frac{6}{y^3}$ d) $\frac{6}{y^3}$

9) One of the following is an inflection point for $f(x) = \frac{x^2}{x^2+3}$

a) $(-1, \frac{1}{4})$ b) $(0, \frac{1}{3})$ c) $(1, \frac{4}{7})$ d) $(-2, \frac{4}{7})$

10) $f(x) = \frac{x^2}{x^2+3}$ increasing in

a) $[-1, 1]$ b) $[1, \infty)$ c) $(-\infty, 0]$ d) $[0, \infty)$

11) $f(x) = \frac{x^2}{x^2+3}$ concave down in

a) $[-1, 1]$ b) $(-\infty, -1) U (1, \infty)$ c) $(-1, 1)$ d) $[0, \infty)$

12) $f(x) = \frac{x^2}{x^2+3}$ has absolute maximum at

a) $x = -1$ b) $x = 0$ c) $x = 1$ d) non of these