Q1) One of the following methods does **NOT** utilize the linear behavior of the function in the root searching domain:

A) False position B) Bisection C) Newton D) Secant

Q2) For finding the root of $f(x) = \cos x - 0.1$ by the secant method, the following choice of initial guesses would **NOT** be appropriate:

A) $\frac{\pi}{4}$ and $\frac{\pi}{2}$ B) $\frac{3\pi}{4}$ and $\frac{5\pi}{4}$ C) $-\frac{\pi}{3}$ and $\frac{\pi}{4}$ D) $\frac{\pi}{3}$ and $\frac{\pi}{2}$

Q3) Given the linear system: $2x_1 + x_2 = 3$, $x_1 + ax_2 = b$. What values of ***a*** and ***b*** that make the system with infinite solutions:

A) a=2/3 and b=1 B) a=1/2 and b=3/2 C) a=1/2 and b≠3/2 D) a=1/3 and b=3/2

Q4) If the root of $f(x) = x^2 + \cos(x)$ is estimated using Newton's method with $x_0 = 0.1$, the value of x_1 will be: A) 15.2 B) -3.13 C) -2.23 D) -9.93

Q5) If $f(x) = ax - \ln bx$, where ***a*** and ***b*** are positive constants, then f(x) has real roots only when: A) $b/a \geq e$ B) $a \geq b$ C) $a \geq \ln b$ D) $ab \geq 1$

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Q6) The matlab command (>> t = 1:0.25:2.0) would generate a vector t with dimension equals to: A) 4 B) 7 C) 2 D) 5

Q7) The truncation error of estimating sin(π/6) using second order Taylor expansion around zero equals: A) 1.95 % B) 15.56% C) 4.72 % D)23.04 %

Q8) round-off error may come from

a) limited storage in computers b) arithmetic of numbers with different accuracy

c) replacing an infinite procedure by a finite one d) too big or too small numbers

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Q9) If the current values for x_L and x_u while using the ~~false-position~~ bisection method are 5.2 and 5.4 respectively, then the corresponding approximate relative error is:

A) 0.97 % B) 1.89% C) 0.72 % D) 2.04 %

Q10) For the equation: $e^{2x} - 12x = 0$, which of the following formulations would most likely locate a real root using fixed-point iteration method in the range [1,2]:

a) $g(x) = \ln\left(\sqrt{12x}\right)$ b) $g(x) = e^{2x}/12$

c) $g(x) = e^{2x} - 11x$ d) none of the above

Q11) Assuming an initial bracket of [1,4], the second iterative value of the root of $f(t)=te^{-t} - 0.3$ using the bisection method is:

a) 0 b) 1.5 c) 1.75 d) 3.25

Q12) If for a real continuous function $f(x)$, $f(a)f(b) \geq 0$, then in the range $[a,b]$ $f(x)$ has: A) one root B) at least one root C) two roots D) cannot tell.

Good luck

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Q1) Truncation error may come from
a) limited storage in computers (b) arithmetic of numbers with different accuracy
c) replacing an infinite procedure by a finite one d) too big or too small numbers

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Q2) If the current values for x_L and x_u while using the ~~false-position~~ bisection method are 5.1 and 5.2 respectively, then the corresponding approximate relative error is:

A) 0.97 % (B) 1.89% C) 0.72 % D)2.04 %

Q3) For the equation: $e^{2x} - 10x = 0$, which of the following formulations would most likely locate a real root using fixed-point iteration method in the range [1,2]:

a) $g(x) = \ln\left(\sqrt{10x}\right)$ b) $g(x) = e^{2x}/10$
(c) $g(x) = e^{2x} - 9x$ d) none of the above

Q4) Assuming an initial bracket of [1,4], the second iterative value of the root of $f(t)=te^{-t} - 0.3$ using the bisection method is:

a) 0 b) 1.5 (c) 1.75 d) 3.25

Q5) If for a real continuous function $f(x)$, $f(a)f(b) < 0$, then in the range $[a,b]$ $f(x)$ has: A) one root B) two roots C) no roots (D) at least one root.

Q6) One of the following methods does **NOT** utilize the linear behavior of the function in the root searching domain:
A) False position B) Bisection C) Newton (D) Secant

Q7) For finding the root of $f(x) = \cos x - 0.1$ by the secant method, the following choice of initial guesses would **NOT** be appropriate:

A) $\frac{\pi}{4}$ and $\frac{\pi}{2}$ B) $\frac{3\pi}{4}$ and $\frac{5\pi}{4}$ (C) $\frac{\pi}{2}$ and $\frac{\pi}{4}$ D) $\frac{\pi}{2}$ and $\frac{\pi}{2}$

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