Name——————————————, **ID** ——————————

MTH 111, Math for Architects, Quiz One Spring 2013

Ayman Badawi

QUESTION 1. Find an equation of the ellipse that has the following properties: Center $(4, 2)$, one of the vertices is $(9, 2)$, one of the foci is $(7, 2)$. Then find all vertices of the ellipse. Find its constant k. Make a rough sketch of such ellipse.

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MTH 111, Math for Architects, Quiz two Spring 2013

Ayman Badawi

QUESTION 1. Let $y = 3x^2 - 12x + 9$. Find the vertex, focus and the directrix of the parabola. (make a rough sketch of the parabola)

QUESTION 2. Given x = -2 is the directrix of a parabola that has (1, 2) as its focus. Find the equation of the parabola. (Make rough sketch)

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MTH 111, Math for Architects, Quiz four Spring 2013

Ayman Badawi

QUESTION 1. Given (1, 2, 3), (-1, 4, 3), (2, 2, 6) not on the same line. Find an equation of the plane that contains the three given points.

QUESTION 2. Let $W = 3i + 4k$. Find a vector v that is parallel to W where $|v| = 4.78$

QUESTION 3. Given $|v| = 2$, $|f| = 4$ where v, f are vectors and v is parallel to f. What are the possibilities for $v.f$?

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MTH 111, Math for Architects, Quiz 6 Spring 2013

Ayman Badawi

QUESTION 1. Find a parametric equations of the line where the two planes $3x - y + 2z = 7$ and $x + 2y - z = 9$ intersect.

Find the point (x, y, z) where the two lines $L_1 : x = 2t + 1, y = -2t, z = 4$, $L_2 : 2 - 3s + 2, y = 3 - s, z = 6 - 2s$ intersect.

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MTH 111, Math for Architects, Quiz 6 Spring 2013

Ayman Badawi

QUESTION 1. Find a parametric equations of the line where the two planes $3x - y + 2z = 7$ and $x + 2y - z = 9$ intersect.

Find the point (x, y, z) where the two lines $L_1 : x = 2t + 1, y = -2t, z = 4$, $L_2 : x = 2 - 3s, y = 3 - s, z = 6 - 2s$ intersect.

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MTH 111, Math for Architects, Quiz 7 Spring 2013

Ayman Badawi

QUESTION 1. Find y' and don't simplify :

a) $y = 3e^{(2x+4)} + ln(7x^2 + 8x + 7) + 10x$

b) $y = 4x(7x + 2)^3 + \sqrt{4x + 9} + \frac{7}{x^3}$

c) $y = \sqrt[3]{7x + 1} + \frac{e^{(3x+1)}}{ln(5x+2)}$

QUESTION 2. a) Find $lim_{x\to 2} \quad \frac{e^{(2x-4)}-1}{3x^2-3x-6}$

b) Find $Lim_{x\to -3} \quad \frac{\sqrt[3]{3x+1}+2}{7x+21}$

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MTH 111, Math for Architects, Quiz 8 Spring 2013

Ayman Badawi

QUESTION 1. Find y' and don't simplify :

a) $y = 2xe^{(2x+4)} + \frac{3x}{ln(3x)} + 10x$

b) $y = \sqrt{4x+9} + \frac{7}{2x^2+e^{3x}+2}$

c) $y = \left(e^x + ln(2x+3) + \sqrt{3x+1}\right)^7$

QUESTION 2. Let $f(x) = 4xe^{2x-3} + 3\sqrt{8x-3} + ln(6x-8) - 1$

a) Find the equation of the tangent line to the curve of $f(x)$ when $x = 1.5$.

b) Find the actual value for $f(1.8)$ [you may want to use a calculator]

c) Use (a) to approximate $f(1.8)$.

QUESTION 3. a)Given $e^{2x-10} + ln(2x+3y) + yx + 14 = 0$. Find the equation of the tangent line to the curve at $(5, -3)$.

b) Approximate the y-value when $x = 5.2$

QUESTION 4. a) Find all local min and local max of y where $y = -x^2e^x + 3e^x + 1$.

b) For what values of x does y increase? for what values of x does y decrease?

c) Let y as above but defined on [-4, 2] (i.e., $-4 \leq x \leq 2$). Find the absolute Max value of y and the absolute min of y.

QUESTION 5. Find two numbers A, B where $A + 2B = 15$ and AB is maximum.

QUESTION 6. We want to construct a rectangle with maximum area such that two vertices on the line y = 12 and the other two vertices on the curve $y = x^2$. What should be the length and the width of such rectangle?

QUESTION 7. Evaluate the following integrals:

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MTH 111, Math for Architects, Quiz 10 Spring 2013

Ayman Badawi

QUESTION 1. Given the points: $A = (2, 4)$ and $B = (0, 2)$. Find a point C on the x-axis so that $|AC| + |CB|$ is minimum. You need to find the coordinates of the point C.

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