Name———————————————, ID ———————————

Quiz I MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. 1. Given $f_1 = (4, -3)$, $f_2 = (4, 1)$ are the foci of an ellipse and $k = 10$ is the ellipse constant.

(i) Sketch roughly such ellipse.

(ii) Find all 4 vertices

(iii) Find the equation of the ellipse.

QUESTION 2. Let $y = 3x^2 - 12x + 6$.

(i) Rewrite as $4d(y - y_0) = (x - x_0)^2$.

(ii) Find the focus and the vertex.

(iii) Find the equation of the the directrix line.

(iv) Sketch a rough graph of such parabola.

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Quiz II: MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. Consider the hyperbola $\frac{(x+2)^2}{9} - \frac{y^2}{7} = 1$

(i) Sketch roughly such hyperbola .

(ii) Find the constant k.

(iii) Find V_1, V_2 (the two vertices of such hyperbola)

(iv) Find F_1, F_2 (the foci of such hyperbola)

QUESTION 2. Let $v =< 3, 4 >$.

(i) Find |v|

(ii) If $(-3, 5)$ is the initial point of v, what is the terminal point of v?

(iii) If $(6, -7)$ is the terminal point of v, what is the initial point of v?

(iv) Is $w =< -12, 6 >$ orthogonal (perpendicular) to v? why?

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Quiz III: MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. (i) Let $V =< 3, -4 >$ and $W =< -4, 0 >$. Find the angle between them.

(ii) Let $V =< 1, -2, 3 >$ and $W =< 5, 10, -5 >$. Find the angle between them

(iii) Let $V =< 4, 0 >$ and $W =< -4, 6 >$.

a) Draw V and W in the xy-plane (so that V and W have the same initial point).

b) Draw the projection of W on V

c) Find the projection of W on V .

d) Draw the projection of V on W.

e) Find the projection of V on W.

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Quiz IV: MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. (i) Let $V =< -4, 1 >$ and $W =< 4, 7 >$. a) Draw V and W in the xy-plane (so that V and W have the same initial point).

b) Draw the projection of W on V

c) Find the projection of W on V .

d)Find $|Proj_V^W|$.

e) Find the Injection of W on V.

d) Find $|Inj_V^W|$.

f) Given $Q = (-4, -3)$is not laying on the line $L : 5y - 2y = 10$. Find the distance between Q and L (i.e., find $|QL|$)

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Quiz V: MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. Given that $(1,2,3)$ lies on a line L in 3D and L is in the direction of the vector $v =< 2,4,6 >$. Find a parametric equations of L

QUESTION 2. Given $q_1 = (1,3,1), q_2 = (2,7,0), (4,1,3)$ are 3 points in 3D.

(i) Find the vector $V = q_1q_2$

(ii) Find the vector $W = q_1q_3$

(iii) Find the vector $N = VXW$.

(iv) Find the equation of the plane that contains q_1, q_2, q_3.

(v) Can we draw the vector $M =< 2,0,-1 >$ in the plane as in (iv)? explain

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Quiz VI: MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. Find y' and do not simplify

(i) $y = 3e^{(2x+1)} + 3x^2 + 10x - 12$

(ii) $y = \sqrt{-2x+1}$

(iii) $y = ln[(3x+2)^5] + 4x - 2$

QUESTION 2. Let $f(x) = e^{(x+1)} - ex + 2$.

(i) Find all critical points of $f(x)$

(ii) For what values of x does $f(x)$ increase?

(iii) For what values of x does $f(x)$ decrease ?

(iv) Roughly, sketch $f(x)$.

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Quiz 7: MTH 111, Fall 2016

Ayman Badawi

QUESTION 1. Given $x^2y + ye^x + 2y - 3 = 0$. Find the equation of the tangent to the curve at $(0, 1)$.

QUESTION 2. Let $Q = (-3, 4), A = (0, -2)$. Find a point, say B, on the line $x = 6$ so that $|QB| + |BA|$ is minimum.

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