Name————————————————————, ID ————————————

Quiz I MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. 1. Given $f_1 = (-5, 2), f_2 = (1, 2)$ are the foci of an ellipse and $k = 8$ is the ellipse constant.

(i) Sketch roughly such ellipse.

(ii) Find all 4 vertices

(iii) Find the equation of the ellipse.

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

(i) Find the focus and the vertex.

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

(iii) Sketch a rough graph of such parabola.

Faculty information

Ayman Badawi, Department of Mathematics & Statistics, American University of Sharjah, P.O. Box 26666, Sharjah, United Arab Emirates.
E-mail: abadawi@aus.edu, www.ayman-badawi.com

Name————————————————————, ID ————————————

Quiz II: MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. Consider the hyperbola $\frac{(y-5)^2}{4} - \frac{(x+2)^2}{12} = 1$

(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 $v =< -4, 3 >$.

(i) Find |v|

(ii) If $(-8, 2)$ is the initial point of v, what is the terminal point of v?

(iii) Is $w =< 2, 3 >$ orthogonal (perpendicular) to v? If not, then find the angle between them.

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E-mail: abadawi@aus.edu, www.ayman-badawi.com

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Quiz III: MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. (i) Let $V =< 2, -2, -1 >$, $W =< 4, 3, 0 >$. Find $Proj_W^V$. Then find $|Proj_W^V|$.

(ii) Find a parametric equations of the line that passes through the two point: $M = (1, 2, 5)$ and $N = (6, -3, 7)$.

(iii) Let $M = (4, 2)$ and $N = (-5, 0)$. Draw the Projection vector M over N (i.e. draw $Proj_N^M$)

(iv) Find a parametric equations of the line that passes through the point $M = (1, 2)$ and with direction vector $< 5, 7 >$.

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Ayman Badawi, Department of Mathematics & Statistics, American University of Sharjah, P.O. Box 26666, Sharjah, United Arab Emirates.
E-mail: abadawi@aus.edu, www.ayman-badawi.com

Name————————————————————, ID ————————————

Quiz IV: MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. (i) Let $L_1 : x = 2t - 1, y = t + 2, Z = 3t$, $L_2 : x = 2s - 5, y = s, z = -s + 6$. If L_1 intersects L_2, find the intersection point.

(ii) Find an equation of the plane that passes through $(0, 1, 2), (-1, 2, 0), (4, 2, 1)$.

(iii) Can we draw the vector $v =< 3, -2, 1 >$ inside the plane $2x + y - 4z = 12$? EXPLAIN

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Ayman Badawi, Department of Mathematics & Statistics, American University of Sharjah, P.O. Box 26666, Sharjah, United Arab Emirates.
E-mail: abadawi@aus.edu, www.ayman-badawi.com

Name————————————————————, ID ————————————

Quiz V: MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. (i) Let $P_1 : x + 2y - z = 4, P_2 : -x - y + z = 2$. If P_1 intersects P_2 find the intersection line.

(ii) Let $P_1 : x + y + z = 2$, $P_2 : -x - z = 4$, $P_3 : -2x - 2y - z = 0$. If the three planes intersect, what is the intersection?

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Ayman Badawi, Department of Mathematics & Statistics, American University of Sharjah, P.O. Box 26666, Sharjah, United Arab Emirates.
E-mail: abadawi@aus.edu, www.ayman-badawi.com

Name————————————————————, ID ————————————

Quiz VI: MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. find y' (Do not simplify)

(i) $y = 3x^4 - 7x + 4$

(ii) $y = \sqrt{3x+2} - \frac{5}{x} + 1$

(iii) $y = 6(\sqrt[5]{(x^2+10x)^3}) - x$

(iv) $\dfrac{x^6+4x^4-7}{x^3}$

QUESTION 2. Find the equation of the tangent line to the curve of $f(x) = -4x^3 + 7x + 11$ when $x = 2$

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E-mail: abadawi@aus.edu, www.ayman-badawi.com

Name———————————————, ID ———————————

Quiz VII: MTH 111, Spring 2017

Ayman Badawi

QUESTION 1. find y' (Do not simplify)

(i) $y = (\sqrt{x} + 3x)^3(4x - 2)^5$

(ii) $y = (3x^2 - 6x + 3)^{10}(7x + 2)^6$ *(it is boring...enough of product formula)*

QUESTION 2. Let $f(x) = x^3 - 3x^2 - 9x + 8$

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

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

Find all local minimum points and local maximum points.

Roughly, sketch the curve of $f(x)$

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E-mail: abadawi@aus.edu, www.ayman-badawi.com