Saudi Electronic University

Final Examination (Form A) | **Fundamentals of Mathematics**

Date: 12.05.2014 | **MATH 001**

Student Name (ARABIC):

Student ID:

Instructor Name:

CRN :

Instructions:

This exam duration is **2 hours.**
This is NOT an open book exam.
The use of calculators is permitted.
The use of mobile phones is NOT permitted.
Please answer all the **5** questions.
The number of pages is **9 pages** including this page.

Marking Scheme:

	Question	Score	
1	(30 Marks)		
2	(4 Marks)		
3	(6 Marks)		
4	(4 Marks)		
5	(6 Marks)		**Signature**
	TOTAL		

Question 1: (30 points)

Choose the correct answer, write your answer in the table below:

1. The product of two negative numbers is:

a) negative b) positive c) zero d) either positive or negative

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2. If $\frac{a}{b}$, is a rational number then the conditions on a and b are:

a) $\begin{cases} a > 0 \\ b > 0 \end{cases}$ b) $\begin{cases} a \neq 0 \\ b \neq 0 \end{cases}$ c) $\begin{cases} a > 0 \\ b \neq 0 \end{cases}$ d) $\begin{cases} a \text{ and } b \text{ integers} \\ b \neq 0 \end{cases}$

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3. The solution set of the equation $\sqrt{x^2} = 6$ is:

a) $\{-6 , 6\}$ b) $\{ 6\}$ c) $\{-6\}$ d) $\{-36 , 36\}$

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4. Any two parallel lines have the same:

a) $x-$intercept b) $y-$intercept c) slope d) equation

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5. The equation of the line perpendicular to the line $y = \frac{1}{2}x + 5$ and containing the point $(2 , 1)$ is:

a) $y = \frac{1}{2}x$ b) $y = -2x - 3$ c) $y = -\frac{1}{2}x - 5$ d) $y = -2x + 5$

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6. $\sqrt{-64}$ =

a) 8 b) -8 c) $-8i$ d) $8i$

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7. The interval notation for the set $\{x : -3 \leq x < 5\}$ is:

a) $(-3 , 5)$ b) $[-3 , 5]$ c) $(-3 , 5]$ d) $[-3 , 5)$

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8. $LCM\ (x^2 - x , x^2 - 1) =$

a) $x^3 - x$ b) $x - 1$ c) $x^4 - x$ d) $x(x+1)$

9. The factorization of $x(x-5)-3(x-5)$ is:

a) $-3x(x-5)$ b) $-3x(x-5)^2$ c) $(x-5)(x-3)$ d) $(x-5)(x+3)$

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10. The result of the division $\dfrac{\sqrt[3]{16x^5y^6}}{\sqrt[3]{2x^2y^3}}$ is:

a) $2xy$ b) $2x^2y^2$ c) $4x^3y^3$ d) $8x^3y^3$

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11. The slope of the horizontal line $y=2$ is:

a) 2 b) -2 c) 0 d) undefined

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12. The result of the multiplication $\left(\sqrt{x}+\sqrt{y}\right)\left(\sqrt{x}-\sqrt{y}\right)$ is:

a) $x+y$ b) $x-y$ c) $-2xy$ d) $\sqrt{2xy}$

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13. The simplification of $\left|\dfrac{-24x^3}{8x^2}\right|$ is**:**

a) $-3|x|$ b) $3|x|$ c) $-3x$ a) $3x$

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14. The solution set of the quadratic equation $x^2-5x+6=0$ is:

a) $\{-2\ ,\ 3\}$ b) $\{-2\ ,\ -3\}$ c) $\{2\ ,\ -3\}$ d) $\{2\ ,\ 3\}$

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15. The subtraction $\left(3x^2-x+3\right)-\left(-x^2+x+1\right)$ is equal to:

a) $2x^2+2$ b) $4x^2-2x+2$ c) $4x^2+2x+2$ d) $2x^2+4$

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16. The solution set of the equation $|x-1|=5$ is:

a) $\{6\}$ b) $\{-6\}$ c) $\{-4\ ,\ 6\}$ d) $\{-5\ ,\ 5\}$

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17. The result of $\dfrac{a^{-1}\cdot b^{3}}{a^{2}\cdot b^{-2}}$ is:

a) $a^{-3}b^{5}$ b) ab c) $a^{3}b^{-5}$ d) $a^{-1}b^{-1}$

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18. The result of $\dfrac{x}{3y} \div \dfrac{5}{6y}$ is:

a) $\dfrac{5x}{18y^{2}}$ b) $\dfrac{18y^{2}}{5x}$ c) $\dfrac{x+5}{9y}$ d) $\dfrac{2x}{5}$

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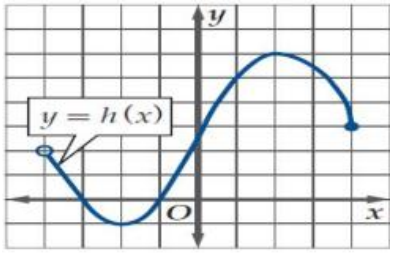
19. The domain of the function graphed bellow is:



a) $[-4\,,\,4]$ b) $[-1\,,\,6]$ c) $(-4\,,\,4]$ d) $(2\,,\,3]$

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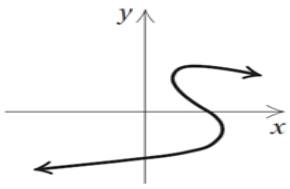
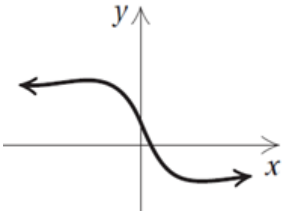
20. Which of the following is a graph of a function:

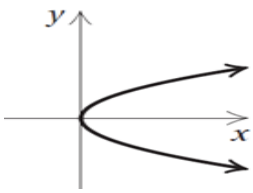
a)



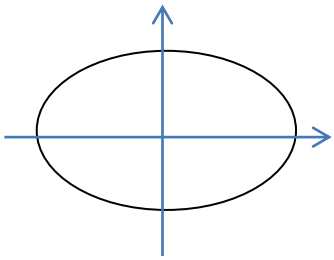
b)



c)



d)



Question	1	2	3	4	5	6	7	8	9	10
Answer										
Question	11	12	13	14	15	16	17	18	19	20
Answer										

Question 2: (4 points)

Perform and simplify the following:

1. $(2x-3)^2-3x(x^2+5x-2)$

2. $\dfrac{x+2}{(x-1)^2}\cdot\dfrac{(x-3)^2}{x^2-4}\cdot\dfrac{3x-3}{3-x}$

Question 3: (6 points)

Solve the following equations and inequalities:

1. $\sqrt{x+5} = x+3$

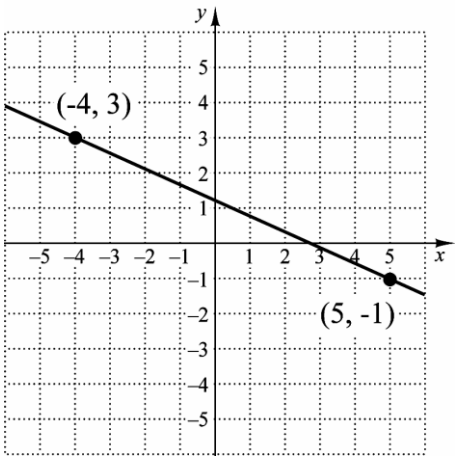
2. $x^2 - 2x + 5 = 0$

3. $3|2x-1| - 5 \leq 4$

Question 4: (4 points)

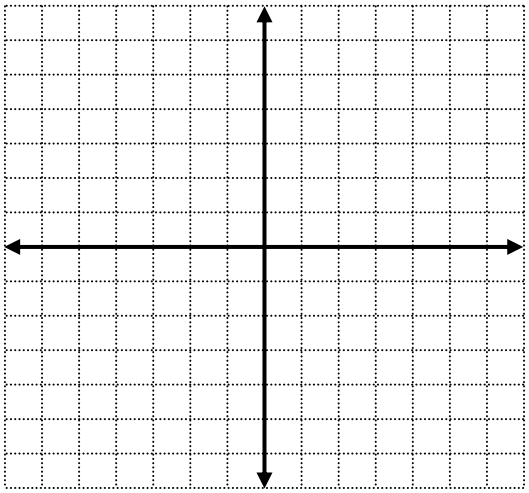
1. Given $f(x) = 6 + 3x^2$ and $g(x) = 2x - 1$, find $f(g(-3))$

2. Write an equation for the line shown in the graph bellow:



Question 5: (6 points)

1. Solve the system $\begin{cases} 2x - y = 1 \\ -x + 3y = 2 \end{cases}$ graphically.



2. Solve the following system using the elimination method:

$$\begin{cases} 18x - 75y = 2 \\ 12x - 45y = 4 \end{cases}$$