Saudi Electronic University

Final Examination (Summer Term) **Fundamentals of Mathematics**

Date: 18.08.2014 **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 **8 pages** including this page.

Marking Scheme:

Question	Score	
1 (40 Marks)		
2 (6 Marks)		
3 (8 Marks)		
4 (8 Marks)		
5 (8 Marks)		**Signature**
TOTAL		

Question 1: (40 points)

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

1. The degree of the polynomial $4x-5$ is:

a) 4 b) 5 c) 0 d) 1

2. One of the following numbers hasn't a reciprocal:

a) 1 b) 0 c) $\sqrt{2}$ d) $-\frac{1}{2}$

3. The **y − intercept** for the line $y=5$ is:

a) $(0,5)$ b) $(5,0)$ c) $(0,0)$ d) $(5,5)$

4. $(a-b)^2=$

a) a^2-b^2 b) $a^2-2ab+b^2$ c) a^2+b^2 d) $a^2+2ab+b^2$

5. The equation of the line passing through the points $(2,2)$ and $(3,3)$ is:

a) $y=3x+3$ b) $y=2x+2$ c) $y=x$ d) $y=5x+5$

6. The solution set for the equation $2|x|=-4$ is :

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

7. The second coordinate is always negative in quadrants:

a) I and II b) II and III c) I and IV d) III and IV

8. The simplification of $8^{\frac{1}{3}}$ is:

a) $\frac{8}{3}$ b) 2 c) $\frac{3}{8}$ d) $\frac{1}{8^3}$

9. The set of numbers for which the rational expression $\frac{x^2+4}{x^2-4}$ is <u>not defined</u> is:

a) $\{4,-4\}$ b) $\{0,-4\}$ c) $\{2,-2\}$ d) $\{0,4\}$

10. The result of $\sqrt{-8}$ is **:**

a) $2\sqrt{2}$ b) $-2\sqrt{2}$ c) $-2\sqrt{2}i$ d) $2\sqrt{2}i$

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11. The factorization of x^2+5x+4 is:

a) $(x+4)(x+1)$ b) $(x+5)(x-1)$ c) $(x+4)(x+5)$ d) $(x-4)(x-1)$

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12. The Least common multiple (*LCM*) of $12x^6$ and $20x^2$ is:

a) $240x^8$ b) $2x$ c) $4x^2$ d) $60x^6$

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13. The domain of the function $f(x)=\dfrac{\sqrt{2x-8}}{5}$ is:

a) $\{x \mid x \text{ is a real number and } x>4\}$ b) $\{x \mid x \text{ is a real number and } x\neq 5\}$

c) $\{x \mid x \text{ is a real number and } x\geq 4\}$ d) $\{x \mid x \text{ is a real number and } x\leq 4\}$

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14. The interval notation for the set $\{x \mid -2<x\}$ is:

a) $(-2,\infty)$ b) $(-\infty,-2]$ c) $(-\infty,-2)$ d) $[-2,\infty)$

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15. The solution set of the equation $x^2-3x-18=0$:

a) $\{3,6\}$ b) $\{-3,-6\}$ c) $\{-3,6\}$ d) $\{3,-6\}$

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16. The result of the multiplication $(\sqrt{x}+1)(\sqrt{x}-1)$ is:

a) $x+1$ b) $x-1$ c) $\sqrt{x}-1$ d) $2\sqrt{x}$

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17. If $f(x)=x^3-x^2$, then $f(-1)$ is equal to:

a) 0 b) -1 c) -2 d) 2

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18. The set $\left\{ \frac{a}{b} \middle| \, a \,\&\, b \in Z \text{ and } b \neq 0 \right\}$ is called the set of :

a) Integers b) Whole numbers c) Natural numbers d) Rational numbers

19. The opposite of $-\frac{4}{5}$ is:

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

20. The scientific notation of the number 0.000541 is:

a) 5.41×10^{-4} b) 54.1×10^{-5} c) 5.41×10^{4} d) 54.1×10^{5}

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: (6 points)

Perform and simplify the following:

1. $\frac{16}{x^2-1}+\frac{8}{x+1}-\frac{7}{x-1}$

2. $\frac{3x+3}{x^2+4x+4}\times\frac{x^2-4}{-2x-2}$

Question 3: (8 points)

Solve the following equations:

1. $3x+4(x+2)=11+7x$

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

Question 4: (8 points)
Solve the following inequalities:

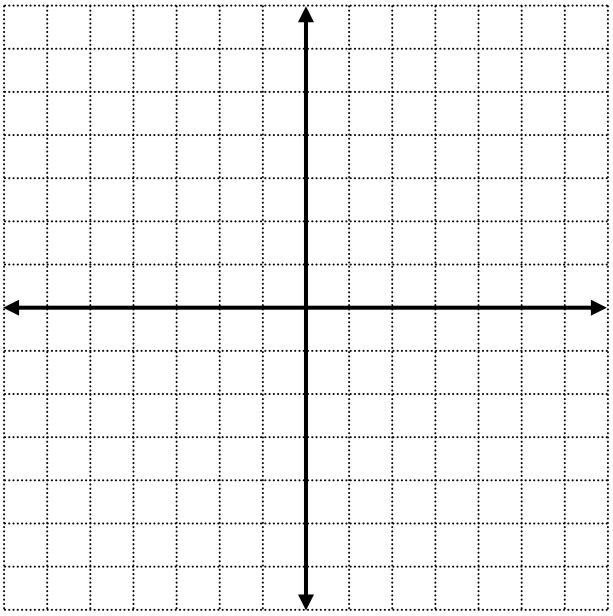
1. $\frac{2}{3}x-\frac{1}{6}+\frac{1}{2}x\leq\frac{7}{6}+2x$

2. $\left|-2x-3\right|\geq 7$

Question 5: (8 points)

1. Graph the solution of the system

$$\begin{cases} x + y \le 4 \\ x - y \le 4 \end{cases}$$



2. Solve the system $\begin{cases} 2x - 3y = 5 \\ 4x + 5y = 6 \end{cases}$ using the Elimination method.