Prince Sultan University

Deanship of Educational Services

PYP Department / Mathematics

COURSE DETAILS:

ORIENTATION MATHEMATICS I	MATH 001	MAJOR EXAM II A
Semester:	Fall Semester --Term 191	
Date:	Sunday November 24, 2019	
Time Allowed:	90 minutes	

STUDENT DETAILS:

Student Name:	
Student ID Number:	
Section:	
Instructor's Name:	

INSTRUCTIONS:

- You may use a scientific calculator that does not have programming or graphing capabilities. NO borrowing calculators.
- NO talking or looking around during the examination.
- NO mobile phones. If your mobile is seen or heard, your exam will be taken immediately.
- Show all your work and be organized.
- You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.

GRADING:

	Page 1	Page 2	Page 3	Page 4	Total	Total
Questions						
Marks	**10**	**10**	**22**	**18**	**60**	**20**

Q.1A (20 points) **Choose the correct answer**

1) If $f(x)=\begin{cases}2x+3 & \text{if } x\le 2\\ x^2+1 & \text{if } x>2\end{cases}$, **find** $f(2)$

A) 12
B) 5
C) 7
D) 2

2) Find the **domain** of $f(x)=\sqrt{3-x}$

A) $(-3,\infty)$
B) $(-\infty,3]$
C) $[3,\infty)$
D) $(3,\infty)$

3) The **solution set** for $3-|2x-1|=0$ is:

A) $\{2\}$
B) $\{-1,2\}$
C) $\{-3,3\}$
D) $\{-2,1\}$

4) The **graph** $f(x+2)-3$ is obtained from the graph $f(x)$ by:

A) Shifting left 2 units and 3 units down
B) Shifting right 2 units and 3 units up
C) Shifting left 3 units and 2 units down
D) Shifting right 3 units and 2 units up

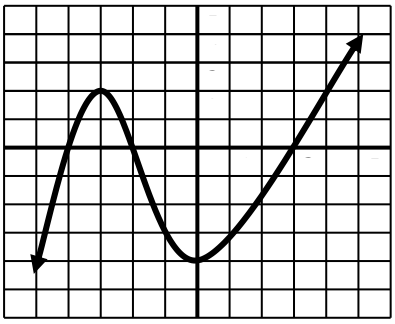
5) The **solution set** of the inequality $8x-10>3x$ is:

A) $[2,\infty)$
B) $(-2,\infty)$
C) $(-\infty,2)$
D) $(2,\infty)$

You must write the correct answer to each question in the box below

Question	**1**	**2**	**3**	**4**	**5**
Answer					

A6) The x **and** y **intercepts** for the graph are:



A) $x-$intercept:$(0,-4)$ and $y-$intercepts: $(-4,0),(-2,0),(3,0)$

B) $x-$intercepts:$(0,-4),(0,-2),(0,3)$ and $y-$intercept: $(-4,0)$

C) $x-$intercepts:$(-4,0),(-2,0),(3,0)$ and $y-$intercept: $(-4,0)$

D) $x-$intercepts:$(-4,0),(-2,0),(3,0)$ and $y-$intercept: $(0,-4)$

7) The **solution set** of the inequality $(x+1)(x-5)<0$ is:

A) $(-1,5)$

B) $(-\infty,-5)\cup(1,\infty)$

C) $(-\infty,-1)\cup(5,\infty)$

D) $(-5,1)$

8) The **real solutions** of the equation $x^4+8x=0$ are:

A) $\{0,-8\}$

B) $\{0,8\}$

C) $\{0,-2\}$

D) $\{-2,0,2\}$

9) Write the following in **standard form** of a complex number $a+bi$: $\sqrt{-4}(2-\sqrt{-9})$

A) $6-4i$

B) $3+4i$

C) $6+4i$

D) $6+2i$

10) Find the **solution set** for the equation $2x(x-2)=5x^2-5x$

A) $\left\{-\frac{1}{3},0\right\}$

B) $\{0,3\}$

C) $\left\{0,\frac{1}{3}\right\}$

D) $\{0\}$

You must write the correct answer to each question in the box below

Question	**6**	**7**	**8**	**9**	**10**
Answer					

Q.2A (6points): Let $f(x)=4x-12$ and $g(x)=x^2-9$, **find:**

a) $(f+g)(x)=$

b) $(g\circ f)(2)$

c) Domain of $\left(\frac{f}{g}\right)$

Q.3 (5 points): Begin by graphing $f(x)=\sqrt{x}$ **,** then **use transformations** of this graph to sketch the graph of $g(x)=-\sqrt{x+1}+3$. **Show all your steps. Find and label the y-intercept on the last sketch.**

Q.4 (8 points): Solve the following inequality, graph the solution set **on real number line** and express your answer in **interval notation**:

a) $|2x+5|+2<11$

b) $\frac{x+4}{2-x}>0$

Q.5 (3 points): Perform the operation and write the result in the standard form: $a+bi$

$$\frac{2i}{3+4i}$$

Q.6A (12 points): Find all **real solutions** of the equation. **Write the solution set**.

a) $x^2 - 10x + 3 = 0$ **use completing the square**

b) $x^4 - 3x^2 - 10 = 0$

c) $\sqrt{2x - 3} + 3 = x$

Q.7 (6 points):

a) The **domain** of f _____

b) The **range** of f _____

c) The intervals on which f is **increasing**

_____

d) The coordinates of the points at which f has **a local maximum**

_____

e) The **value(s) of** x for which $f(x) = 4$.

_____

f) $f(2) =$ _____