



Prince Sultan University
Orientation Mathematics Program
MATH 001 Major Exam 2
Semester 162
Tuesday, May 2, 2017
Time Allowed: 90 minutes

Student Name: _____ Student ID #: _____

Instructor's Name: _____ Sec. #: _____

Important Instructions:

1. You may use a scientific calculator that does not have programming or graphing capabilities.
2. You may NOT borrow a calculator from anyone.
3. You may NOT use notes or any textbook.
4. There should be NO talking during the test.
5. Your exam will be taken immediately if your mobile phone is seen or heard.
6. Looking around or making an attempt to cheat will result in your exam being cancelled.
7. This examination has 12 problems.

Problems	Max points	Student's Points
1-5	20	
6-9	20	
10-12	20	
Total	60	
Total	20	

1) [4 pts] Use the **Quadratic Formula** to solve $3x^2 + 2x + 10 = 0$

2) [16 pts] Solve the following equations

a) $5x^4 - 10x^2 = 0$

b) $5x^2 - 8x - 20 = -2x^3$

c) $\sqrt{x+10} + 10 = x$

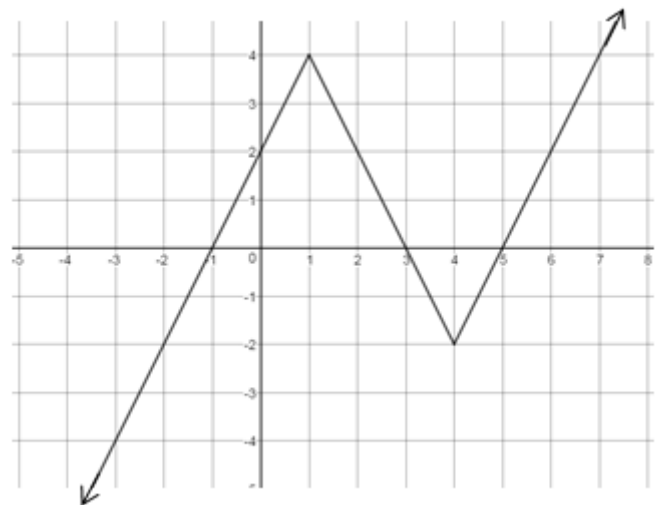
d) $x^4 - 3x^2 - 10 = 0$

3) [4pts] Solve $3|2x+5|+1=10$

4) [4pts] Solve $-7|3x-4|+2 \geq -12$ and **graph** the solution set on a number line.

8) [6pts] Complete the table below regarding the graph of $f(x)$

Find:	Answer
a) the domain of f	
b) the range of f	
c) the x intercepts	
d) the intervals on which f is increasing	
e) the point(s) of the relative maximum of f ?	
f) the value of $f(-2)$	



9) [6pts] If $f(x) = x^2 + 3x + 5$ find the Difference Quotient $DQ = \frac{f(x+h) - f(x)}{h}$

10) [6pts] A line L has the equation $-3x + 9y + 1 = 0$

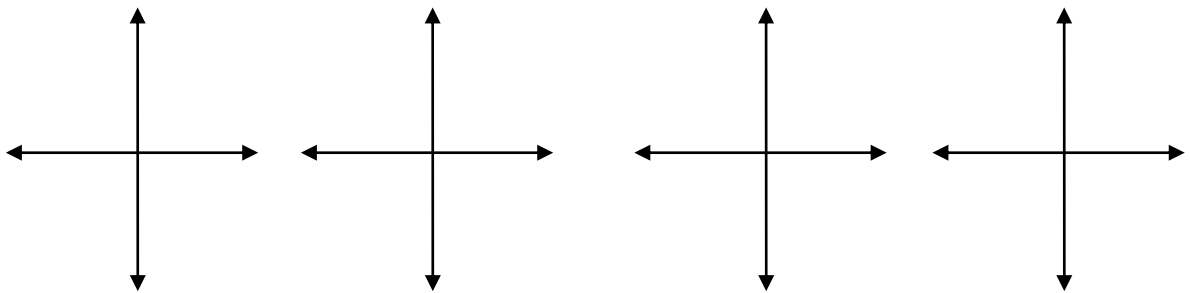
a) Draw line L

b) Find the slope of the line L

c) Find the slope of a line M that is **perpendicular** to line L

d) Find the Point-Slope Form of the equation of the line M , given that it passes through $(1, -3)$

11) [6pts] Use transformations of the graph of $f(x) = \sqrt{x}$ to sketch $g(x) = -\sqrt{x+1} - 2$. Show each step of the transformation. **Find the domain and range of $g(x)$.**



12) [8pts] Given that $f(x) = x^2 + 2x - 1$ and $g(x) = 2x + 5$, find and simplify:

a) $(f - g)(x)$

b) $(f \cdot g)(x)$

c) $(f \circ g)(x)$

d) $(g \circ f)(1)$