MATH 244/GRACEY NAME_____

EXAM 1/CHAPTERS P, 1 AND 2.1-2.5

FULL CREDIT MAY NOT BE GIVEN IF YOUR WORK IS NOT SHOWN!

EXACT ANSWERS ONLY (NO DECIMALS) UNLESS OTHERWISE INDICATED!!!

PART I (50 POINTS POSSIBLE): SOLVE THE FOLLOWING PROBLEMS OVER THE COMPLEX NUMBERS AND SIMPLIFY IF POSSIBLE

1. (10 POINTS)

$$2x^2 - 5x = -6$$

2. (10 POINTS) SOLVE OVER THE REAL NUMBERS FOR PROBLEM 10.

$$\sqrt{x} - 1 = \sqrt{3 - x}$$

3. (6 POINTS)

$$3(2x - 5) + 1 = -2(x - 5)$$

4. (6 POINTS)

$$3-\left|2x-8\right|=-2$$

5. (8 POINTS)

$$\frac{x-12}{x+1}\geq 3$$

6. (10 POINTS) HINT: USE A "U" SUBSTITUTION. THIS IS REDUCIBLE TO QUADRATIC.

$$3x+16\sqrt{x}-12=0$$

PART II (50 POINTS): MISCELLANEOUS

7. (5 POINTS) An electrician can install the electric wires in a house in 12 hours. A second electrician requires 20 hours. How long would it take both electricians, working together, to install the wires?

8. (8 POINTS) Find the equation of the line which is parallel to the line $3x-2y=5$ and passes through the point $(5,-2)$. Write your result in slope-intercept form.

9. (10 POINTS) Find the equation in standard form of the circle that satisfies the following conditions: The diameter of the circle has endpoints $(-1,2)$ and $(7,0)$.

10. (8 POINTS) Let f be a function such that $f(-1)=2$ and $f(2)=-6$. Give the coordinates of 2 points on the graph of

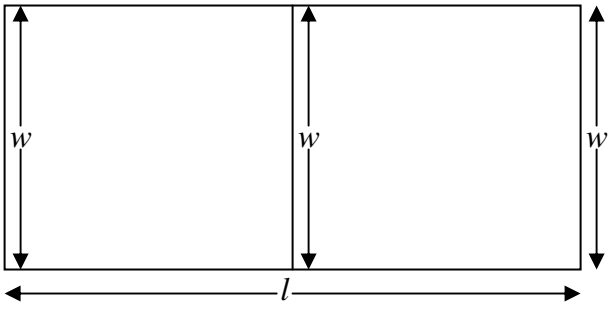
	POINT 1	POINT2
a. $f(-x)$	_____	_____
b. $-f(x)$	_____	_____

11. (5 POINTS) The maximum load a cylindrical column of circular cross section can support varies dierectly as the fourth power of the diameter and inversely as the square of the height. If a column 2 feet in diameter and 10 feet high supports up to 6 tons, how much of a load does a column 3 feet in diameter support? You may round to the nearest tenth.

12. (5 POINTS) Determine algebraically whether the following function is odd, even, or neither.

$$f(x) = 2x^5 - x^2 + 5$$

13. (9 POINTS) A veterinarian uses 600 feet of chain-link fencing to enclose a rectangular region and also to subdivide the region into two smaller rectangular regions by placing a fence parallel to one of the sides, as shown in the figure.



a. Write the width w as a function of the length l.

b. Write the total area A as a function of l.

c. Find the dimensions that produce the greatest enclosed area.