Name: _____

Math 111 Mathematical Methods – Crawford

Exam 2 - Form B

30 October 2015

	Score
1	/4
2	/16
3	/24
4	/6
5	/12
6	/12
7	/8
8	/8
9	/12
Total	/100

Books and notes are not allowed. You may use a calculator. ***Show all your work. Answers without supporting work receive no credit.*** Partial credit may be given for written work. Good Luck!

Calculator Number: _____

1. (4 pts). Find the domain of $f(x) = \dfrac{3x-5}{2}$

2. (16 pts). Given $f(x) = x - 2x^2$ and $g(x) = 3x - 1$, find and simplify the following.

(a). $f(-2)$ [Must show work.]

(b). $f(x + 3)$

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

3. (24 pts). Perform the indicated operations and simplify.

(a). $\dfrac{1}{x^2 - x - 20} \div \dfrac{x^2 + 4x - 5}{x^2 - 25}$

(b). $\dfrac{3x}{5} - \dfrac{x - 2}{3}$

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

4. (6 pts). Simplify the complex fraction $\dfrac{b - \dfrac{2}{a}}{\dfrac{1}{2a} + 3}$

5. (12 pts). Solve the following equations for x.

(a). $-3(2 + 4x) = 3x - 5$

(b). $\dfrac{3}{x} = \dfrac{2}{x - 4}$

6. (12 pts). Given $-2x + 4y = 6$,

(a). Find the x- and y- intercepts. [You must show work for credit.]

(b). Find the slope.

(c). Graph the line and clearly label the intercepts.

7. (8 pts). Given the points $(-1, 3)$ and $(3, -4)$.

(a). Find an equation of the line through the two points. [You do not need to simplify.]

(b). What is the slope of a line perpendicular to the line found in part (a).

8. (8 pts). The cost of building a new house depends on the number of square feet of floor space. Suppose that the builder will charge \$80 per square foot, and that the lot on which the house is to be built costs \$50,000.

(a). Write a linear equation for the total cost as a function of square feet of floor space.

(b). The new owners can afford to pay as much as \$280,000, total, for the house and the lot. What is the largest house they could build?

9. (12 pts). A small business tracks its profits and observes that if 100 units are sold, they make \$2200 in profit. If 250 units are sold, they make \$8500 in profit.

(a). Write a linear equation for the profit as a function of the number of units sold.

(b). How much profit does the company make if 500 units are sold?

(c). Write a sentence that interprets the meaning of the y-intercept.