

Name: \_\_\_\_\_

Take-Home Quiz 3

Math 121 College Algebra – Crawford

Due: Friday, 17 March 2017 beginning of class

Books, notes, and calculators *are* allowed. You are allowed to work with each other and to get help from the tutors, but you cannot get help from me. ***You must show all your work.*** Good luck! [Scores will be scaled to 15 points after grading.]

For spacing reasons, the Section 1.7 problems are on page 2 and the Section 1.8 problems are on page 1.

1. (6 pts) Solve the following inequality. Then graph the solution set.

$$3x^3 + 9x^2 > 0$$

2. (6 pts) Solve the following inequality. Then graph the solution set.

$$\frac{3}{x-2} \geq \frac{2}{x}$$

3. (6 pts) Solve the following inequality. Then graph the solution set.

$$2x + 5 < \frac{8x + 1}{3}$$

4. (6 pts) Solve the following inequality. Then graph the solution set.

$$|3 + 2x| \geq 5$$

5. (6 pts) The average salaries  $S$  (*in thousands of dollars*) for public elementary school teachers in the United States from 2001 through 2011 can be modeled by the following equation where  $t$  represents the year, with  $t = 1$  corresponding to 2001. According to this model, when was the average salary at least \$52,000, but no more than \$56,000? [Give your answer in terms of  $t$  and the actual years.]

$$S = 1.36t + 41.1, \quad 1 \leq t \leq 11$$