

### Study Guide for Midterm Three

The midterm is 85 minutes long and will be given on Wednesday, May 13, 2009 at the beginning of class. Please arrive early so that we can start on time. The test will cover 10.7, Chapter 11, and 9.1-9.3. To study for this test, go through your homework, mastery quizzes, class handouts, and class examples. The test is closed book and closed notes. You will need your calculator for the test. You may not share calculators or use mine. Please seek help in the Math Lab and Learning Center early and frequently. The test will be two parts – one with a calculator and one without.

Be familiar with the instructions specified in the textbook exercises and class handouts. The wording on the test will be similar. It is important to not just know how to do a problem, but to understand what exactly the problem is asking you to do.

**Any use of other electronic devices such as cell phones and mp3 players will result in a 0 on the exam.**

**1. Solve by completing the square. (Know how to solve problems with *i* in the solution.)**

a) $x^2 + 4x + 6 = 0$	b) $9x^2 - 36x = -40$	c) $2x^2 - 3x - 5 = 0$
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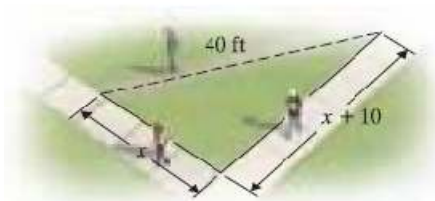
**2. Solve. (Know how to solve problems with *i* in the solution.)**

a) $\frac{3}{x^2-8x+15} = \frac{3x}{x-3} - \frac{x}{x-5}$	b) $3x^{2/3} - 7x^{1/3} = 6$	c) $p^4 + 7p^2 - 8 = 0$
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**3. The cost *C* in dollars of manufacturing *x* bicycles at Holladay’s Production Plant is given by the function  $C(x) = 2x^2 - 800x + 92,000$ .**

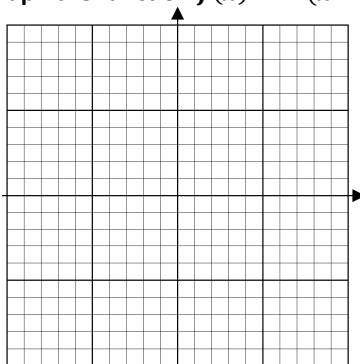
- a) Clearly define your variables.
- b) Find the number of bicycles that must be manufactured to find to minimize the cost.
- c) Find the minimum cost of manufacturing the bicycles.
- d) Find the number of bicycles that can be manufactured at a cost of \$100,200.

**4. Given the diagram, approximate to the nearest foot how many feet of walking distance a person saves by cutting across the lawn instead of walking on the sidewalk.**



- a) In your own words, paraphrase what the problem is asking you to do.
- b) Clearly define your variables.
- c) Solve.
- d) Write your answer in a complete sentence.

**5. Graph the function  $f(x) = 2(x - 1)^2 + 3$ .**



a) opens up or down: \_\_\_\_\_

b) vertex: \_\_\_\_\_

c) axis of symmetry: \_\_\_\_\_

d) 2 additional points on the graph (show work below):

\_\_\_\_\_

**6. Solve the inequality. Then graph your solution and write it in interval notation.**

a) $6x - 4 \leq 2x$ or $-2x < -6$	b) $\frac{7y+28}{4} > 7$	c) $ 5x + 5  + 6 < 13$
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**7. Solve.**

a) $ 5x + 1  =  4x - 7 $	b) $8 +  4m  = - -24 $	c) $ 5x - 2  = 0$
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