

## Study Guide for Midterm Three

The midterm is 75 minutes long and will be given on Tuesday, May 12, 2009 at the beginning of class. Please arrive early so that we can start on time. The test will cover chapters 7, 8, and 10.1 – 10.4. To study for this test, go through your homework, previous quizzes, class handouts, and class examples. The test is closed book and closed notes. You will need a calculator. You may not share calculators or use mine. Please seek help in the Math Lab and Learning Center early and frequently.

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.**

<ul style="list-style-type: none"> <li>• Graphing quadratic equations</li> <li>• Adding, subtracting, and multiplying polynomials</li> <li>• Exponent properties</li> <li>• Factoring polynomials</li> <li>• Solving polynomial equations</li> </ul>	<ul style="list-style-type: none"> <li>• Simplifying rational expressions &amp; finding excluded values</li> <li>• Adding, subtracting, multiplying, and dividing rational expressions</li> </ul>
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Below are some problems and instructions that are representative of what you will see on the test. See your textbook and class handouts for additional problems.

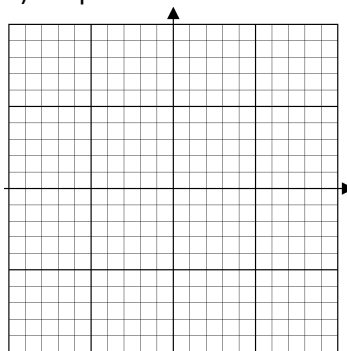
**1. Graph the equation by hand. To begin, substitute the values of -3, -2, -1, 0, 1, 2, and 3 for  $x$ . Make other substitutions as necessary. Then use a graphing calculator to verify your work.**

$$y = -2x^2 + 4x - 2$$

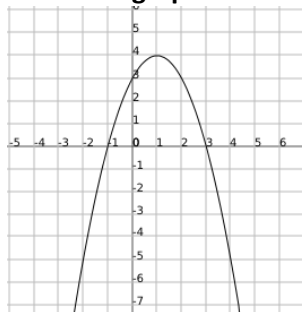
a) Complete the table below

$x$	$y$
-3	
-2	
-1	
0	
1	
2	
3	

b) Graph



**2. Use the graph below to answer the questions that follow.**



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| <ul style="list-style-type: none"> <li>a) Find <math>y</math> when <math>x = 2</math>.</li> <li>b) Find <math>x</math> when <math>y = 3</math>.</li> <li>c) Find <math>x</math> when <math>y = 4</math>.</li> <li>d) Find <math>x</math> when <math>y = 5</math>.</li> <li>e) Find the <math>y</math>-intercept(s).</li> </ul> | <ul style="list-style-type: none"> <li>f) Find the <math>x</math>-intercept(s).</li> <li>g) Find the maximum point.</li> <li>h) Find the vertex.</li> <li>i) Find the axis of symmetry.</li> </ul> |
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**3. Perform the indicated operations & simplify your answers. Leave your answers in factored form if appropriate.**

a) $(4p + 8q) + (4p - 9q)$	b) $(3t - 5w)^2$
c) $(2x - 5)(3x^2 + 4x - 2)$	d) $-5xy(3x^2 - 7xy + 9y^2)$
e) $\frac{9x+7}{x^2-5x+6} - \frac{9}{x-2}$	f) $\frac{-4x+28}{x^2+7x+12} \cdot \frac{x^2-9}{-2x+14}$
g) $\frac{x^2+4x}{x-9} \div (x^2 + 8x + 16)$	h) $(5x - 4y)(3x - 6y)$

**4. Simplify.**

a) $(-2x^2)^0 x^7$	b) $\frac{48x^6 y^4}{8x^5 y^{-3}}$	c) $\frac{7x+28}{x^2+13x+36}$	d) $\frac{(2a^{-6}b)^{-3}}{(3cd^{-2})^2}$	e) $\frac{r^2-s^2}{7r+7s}$	f) $(4x^{-2}y)^3$
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**5. Solve or factor.**

a) Solve. $-x^2 - x + 3 = -9$	b) Factor. $2x^5 + 18x^4 + 40x^3$
c) Solve. $(x + 1)(x - 2) = 4$	d) Solve. $-\frac{1}{2}x^2 + \frac{7}{2}x + 12 = 3$
e) Factor. $3xy^2 - 48x$	f) Solve. $2x^3 - 3x^2 - 50x + 75 = 0$

**6. A rectangular living room floor has an area of 64 square feet. If the length is 12 feet more than the width, find the dimensions of the floor.**

- Clearly define your variables.
- Translate and solve.
- Write your answer in a complete sentence.

**7. Find all excluded values.**

a) $\frac{12x}{x+3}$	b) $\frac{2x}{3}$	c) $\frac{r}{r^2-4r-45}$
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This is just a sampling of the types of problems you can expect – go back through your book/online homework and find more of these types to study. Notice that some of these problems span more than one section and/or chapter.

**Another good way to study would be to use the Chapter Tests and Study Plan in MyMathLab.**