

**Math 80  
Final Exam  
Winter 2010**

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

1. Your exam contains 10 questions and 7 pages; Please make sure you have a complete exam.
2. The entire exam is worth 100 points. Point values vary and these are indicated on each problem. You have 2 hours for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**. If in doubt, ask for clarification. No guessing and checking when solving equations.
4. Simplify your answers as much as possible.
5. Put a box around your final answer where applicable.
6. No calculators are permitted for this exam.
7. If you need extra space, use the back of the exam and clearly indicate this.
8. You are allowed one 8.5" × 11" notesheet for handwritten notes (one side only).

Problem	Total Points	Score
1	11	
2	9	
3	11	
4	6	
5	8	
6	3	
7	15	
8	12	
9	15	
10	10	
Total	100	

1. (11 pts.) Simplify the following as much as possible. Carry out operations (+, −, ×, ÷) where needed.

(a) (1 pts.)  $\sqrt{\frac{1}{16}}$

(c) (2 pts.)  $\sqrt{125}$

(b) (4 pts.)  $(7w - 2)(3w - 5)$

(d) (4 pts.)  $10ab^2(3.6a - 4ab^3)$

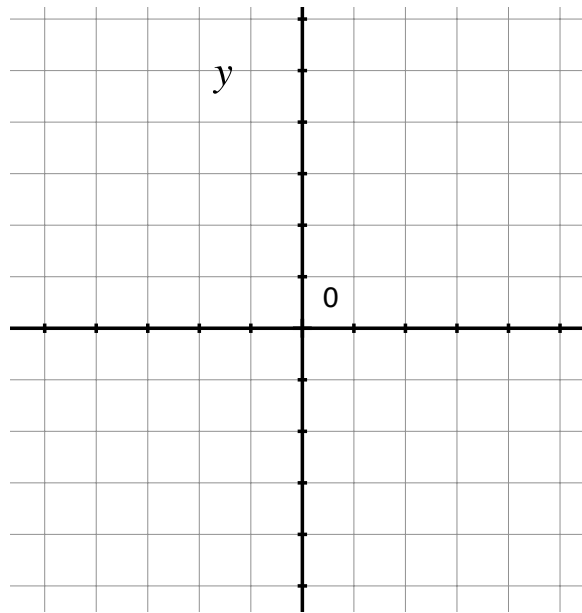
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2. (9 pts.) Solve the following equations.

(a) (5 pts.)  $\frac{2x+16}{5} = 4x - 4$

(b) (4 pts.)  $5t - (t + 2) = 8$

3. (a) (9 pts.) Graph the three lines  $x = 3$ ,  $y = -2$ , and  $4x + 3y = 15$ . Be sure to **put a scale** on your graph and **label** each line.



- (b) (2 pts.) What is the solution of the system  $\begin{cases} x = 3 \\ y = -2 \end{cases}$  ?

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4. (6 pts.) Solve the system  $\begin{cases} 3x + 5y = 7 \\ 2x + 4y = 4 \end{cases}$  by using substitution **or** elimination.

5. (8 pts.) Find an equation of a line through the points  $(3, -2)$  and  $(-3, 0)$ .

Write your final answer in slope-intercept form.

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6. (3 pts.) Does the point  $(\frac{2}{3}, \frac{1}{4})$  lie on the line  $6x = 5 - 4y$ ? Justify your answer.

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7. (15 pts.) **Factor** the following as much as possible. If the polynomial cannot be factored, write **prime**.

(a) (4 pts.)  $t^2 + 20t + 100$

(c) (4 pts.)  $-2x^7 + 18x^5$

# 7 Continued on next page

#7 Continued:

(b) (4 pts.)  $5x^2 - 21x + 4$

(d) (3 pts.)  $m^2 + 4$

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8. (12 pts.) A small movie theater charges \$10 for adult tickets and \$6 for child tickets. One day, the number of child tickets sold was 15 **fewer** than adult tickets sold.

If the total revenue for the theater was \$550 that day, how many of each type of ticket was sold?  
(Use an equation **or** equations to solve. Write your answer in a complete sentence.)

9. (15 pts.) Solve the following equations **using the method specified**. Simplify your answers as much as possible.

(a) (5 pts.) Solve  $4x^3 - 12x^2 - 40x = 0$  by factoring.

(b) (5 pts.) Solve  $t^2 + 10t + 15 = 0$  by completing the square.

(c) (5 pts.) Solve  $\frac{1}{3}x^2 - 3 = x$  by using the quadratic formula.

10. (10 pts.) The height  $h$  (in feet) of a baseball above the ground  $t$  seconds after being thrown is given by

$$h = -16t^2 + 20t + 4.$$

(a) (3 pts.) What is the height of the baseball as it is being thrown (at time 0)?

(b) (7 pts.) Give **all** times at which the baseball is 8 feet high.