

**Math 99**  
**Exam 1**  
**October 20, 2006**

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

1. Your exam contains 5 questions and 5 pages; Please make sure you have a complete exam.
2. The entire exam is worth 100 points. Point values for problems vary and these are clearly indicated. You have 50 minutes for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**; you will not receive any partial credit unless all work is clearly shown. If in doubt, ask for clarification.
4. If you need extra space, use the back page of the exam and clearly indicate this.
5. You are allowed one  $8.5 \times 11$  sheet of handwritten notes (both sides). Graphing and scientific calculators are allowed.
6. Leave answers in exact form (as simplified as possible) or round to 4 decimal places.

Problem	Total Points	Score
1	30	
2	20	
3	5	
4	20	
5	25	
Total	100	

1. (30 pts.) What are the solutions to the following systems of equations?

(a) (10 pts.)  $2x + 10y = 3$   
 $x = 1 - 5y$

(b) (10 pts.)  $4x - 3y = -7$   
 $3x + 2y = 16$

(c) (10 pts.)  $6x - 2y = 24$   
 $y = 3x - 12$

2. (20 pts.) A blue car and a red car leave from the same point, traveling in opposite directions at constant speeds. The blue car drives East and the red car drives West **15 mph faster** than the blue car. If the cars are **460 miles apart** after **4 hours**, find the speed of each car by writing a linear system that models the situation.

3. (5 pts.) Is  $(1, 2, -3)$  a solution to the system  $4x - y + 2z = 3$  ?  
 $x - y - z = 2$   
 $2x + 3y + z = 5$

4. (20 pts.) Solve the following compound inequalities and give the solutions in both interval and graph forms.

(a) (10 pts.)  $3x + 2 \leq 11$  and  $-2x \leq 4$

(b) (10 pts.)  $x - 2 < 1$  or  $5 + \frac{1}{2}x \geq 8$

5. (25 pts.) Solve the following absolute value equalities and inequalities and give the solutions in both interval and graph forms.

(a) (8 pts.)  $|5x + 1| = 11$

(b) (8 pts.)  $|2x - 3| \geq 7$

(c) (9 pts.)  $|-\frac{1}{2}x + 3| < 4$