

MIDTERM 1

Math 110 (Doherty)
January 27, 2007

Name _____

INSTRUCTIONS: PLEASE READ THIS FIRST:

1. Make sure you have a complete exam. The exam has 7 pages, counting this cover page.
2. Show all your work. Use the back of an adjacent page if you need more space.
3. You have 65 minutes.
4. You are not allowed to use a calculator of any kind. Give exact answers (e.g., $\frac{13}{7}$) rather than decimal approximations.
5. If you have questions, raise your hand and I will assist you as soon as possible.

Good Luck.

Problem	Total Points	Score
1	28	
2	10	
3	21	
4	13	
5	12	
6	16	
Total	100	

1. (7 pts each) Solve each equation and state the solution set. Also state whether the equation is inconsistent, conditional, or an identity.

(a) $2(x + 4) - 8 = 2x + 1$

(b) $\frac{3}{4} - \frac{1}{3} \left(\frac{1}{2}y - 2 \right) = 3 \left(y - \frac{1}{4} \right)$

(c) $\frac{2x - 5}{4} - \frac{3x - 1}{6} = -\frac{13}{12}$

(d) $\frac{w - 3}{8} - \frac{5 - w}{4} = \frac{4w - 1}{8} - 1$

2. (5 pts each) Solve for the indicated variable.

(a) $xz + 5 = x + 2y$ for x .

(b) $\frac{1}{x} + \frac{1}{5} = \frac{a}{2}$

3. (7 pts each) Solve each linear inequality in one variable. Give the solution set both graphically and using interval notation.

(a) $0 \leq \frac{3 - 2x}{2} < 5$

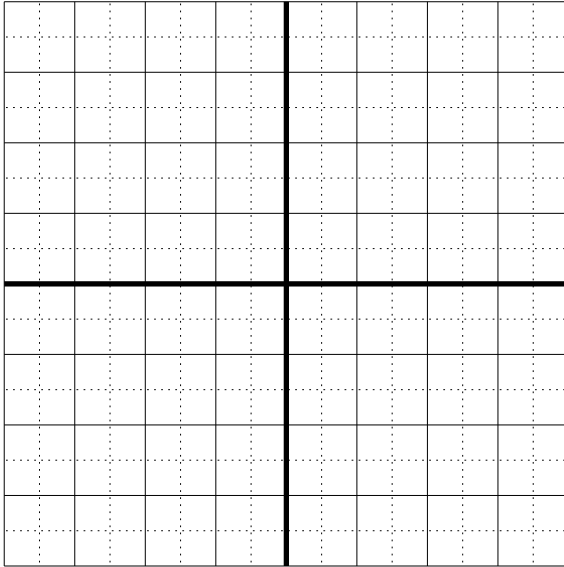
(b) $\frac{1}{2}x - \frac{1}{3} \geq -\frac{1}{6}$ or $\frac{2}{7}x \leq 10$

(c) $\frac{3}{4}x < 9$ and $-\frac{1}{3}x \leq -15$

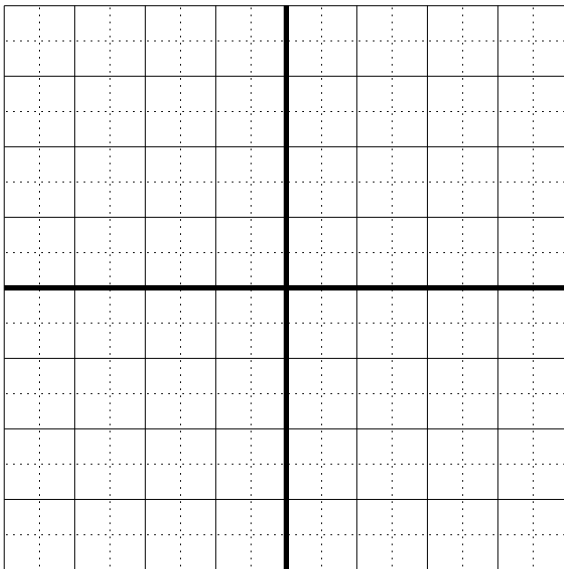
4. (13 pts) You mix 5 pounds of monkey food that sells for \$4 per pound with some gorilla food that sells for \$12 per pound. The resulting mix (food for bonobos) should sell for \$10 per pound. How many pounds of gorilla food did you use?

5. (6 pts each) Write the equation of each line in (i) slope-intercept form and (ii) standard form with integral coefficients. Graph each on the axes provided.

(a) Line l goes through $(-1, -2)$ and is perpendicular to the line through $2y + 5 - 3x = 0$.

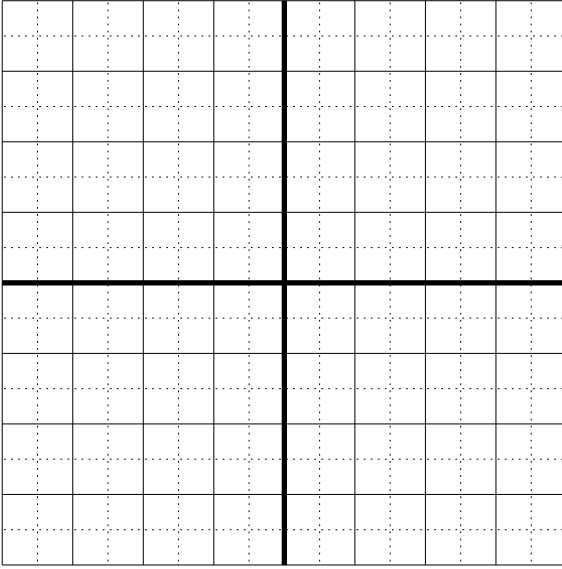


(b) Line l goes through $(-2, 4)$ and is parallel to the line through $(-\frac{1}{2}, \frac{1}{2})$ and $(\frac{1}{4}, -\frac{3}{4})$.



6. (8 pts each) Graph the solution set to each system of linear inequalities on the axes provided.

(a) $3x + 4y \leq 8$ or $3x - 4y > 4$



(b) $5 \leq 2x + 3 < 9$ and $-1 < y + 2 \leq 3$

