

MATH 1010 Assignment 1 Winter 2008

1. Solve each of the following equations for x :

(a) $-5(2-x) + 3(1-2x) = 12x + 1$

(b) $\frac{3x}{-4} + 2(x-5) = \frac{3(1-2x)}{2} - x$

(c) $6 - 7(3-x) + 4x = 2(x-7) + 9x - 1$

(d) $5 - \frac{2-3x}{2} = 1 - \frac{6x+1}{4}$

2. Find all solutions of each of the following inequalities:

(a) $4x - 3 - 2(1+x) \geq x + 12$

(b) $\frac{1}{2}(2-x) - \frac{1}{3}(5+x) < 4$

(c) $\frac{3x}{2} + 2x \leq \frac{8x}{-3} - 1$

3. For the line $5x - 2y = 7$, find each of the following and then draw the line.

(a) x -intercept;

(b) y -intercept;

(c) slope;

(d) the point on the line with y -coordinate equal to 3.

4. Find in general form the equation of the line through the point $(-1, 8)$ that is perpendicular to the line $6y - 5x = -1$.

5. Find slope-intercept form of the equation of the line through the origin that is parallel to the line $\frac{11-8x}{8} = -1 + y$.

6. Find in general form the equation of the line parallel to the line $-6x + 3y + 1 = 0$ that passes through the point where the lines $-3x + 2y = -8$ and $5x + 6y = 4$ meet.

7. Do the lines $7x - 3y = -1$ and $2x + 4y = 7$ intersect? If yes, find the intersection point.

8. Draw the feasible set and find coordinates of all corner points of the region described by the following system of inequalities

$$x + 2y \leq 4$$

$$x - y \leq 1$$

$$3x + 2y \leq 6$$

$$x \geq 0, \quad y \geq 0.$$