MATH 1010 Assignment 1 Summer 2014

1. Solve each of the following equations:

   (a) $\dfrac{2x}{3} + 3(x - 1) = \dfrac{5(1 - 2x)}{4} + 2x$

   (b) $4(x - 1) + 3x = 7x + 24$

   (c) $2(1 - 4y) + 3y + 2 = -5y + 4$

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

   (a) $\dfrac{5x}{2} + 2(3 + x) \geq \dfrac{4}{3}(x - 5)$

   (b) $3(x - 5) - x + 10 \geq 2x + 6$

   (c) $10y + 3(4 - 2y) < 2y + 2(y + 15)$

3. Determine whether each of the following is an equation for a straight line. If an equation does represent a line, draw the line.

   (a) $x + 2y^2 = 1$

   (b) $\sqrt{3}x - \sqrt{5}y = -1$

   (c) $\sqrt{3}x + \sqrt{3}y = \dfrac{1}{\sqrt{3}}$

   (d) $1 - 5x = 2 + \dfrac{x}{3}$

4. Find, in general form, the equation of the line through the point $(2, -3)$ that is perpendicular to the line $6y - 5x = 777$.

5. Find, in general form, the equation of the line parallel to the line $3x + 2y = -72$ that also passes through the point where the lines $6x - 4y = -11$ and $x = 2y$ meet.

6. Draw the feasible set described by the following inequalities:

$$x - 3y \leq 7, \quad 11x + 7y \leq 117, \quad y \geq 3 - x, \quad 7x - 5y + 39 \geq 0.$$

   Do not attempt question 6 until Monday's class.