1) (5 points) Solve the following equation.

$$8 - 4(2x - 3) + 5x = 3(4x - 3) - 3$$

$$8 - 8x + 12 + 5x = 12x - 9 - 3$$

$$-3x + 20 = 12x - 12$$

$$-15x = -32$$

$$\boxed{x = \frac{32}{15}}$$

2) (4 points) Solve for a in the equation given below.
$$ab - c(2 - a) = b(a - 3d)$$

$$ab - 2c + ac = ab - 3bd$$

$$ab + ac - ab = 2c - 3bd$$

$$\underbrace{}$$

ALL TERMS
INVOLVING a
ON LEFT.

$$\frac{ac}{c} = \frac{2c - 3bd}{c}$$

$$\boxed{a = \frac{2c - 3bd}{c}}$$

NOTE: IF

$$ab - ac = 3 + d - 5e$$

$$\frac{a(b - c)}{b - c} = \frac{3 + d - 5e}{b - c}$$

$$a = \frac{3 + d - 5e}{b - c}$$

3) (5 points) Solve the inequality given below. Graph the solution set.
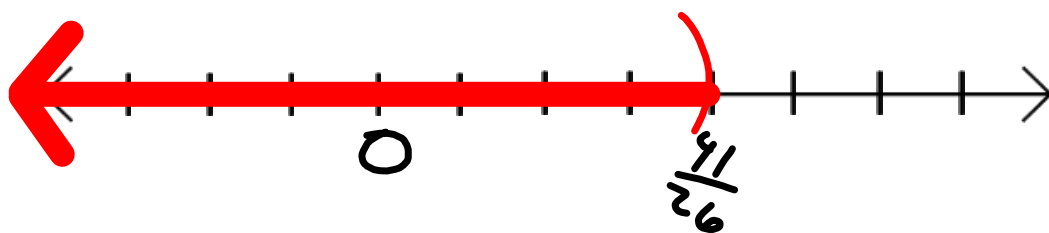
$$4(5x - 7) - 6 < -2(3x - 4) - 1$$

$$20x - 28 - 6 < -6x + 8 - 1$$

$$20x - 34 < -6x + 7$$

$$26x < 41$$

$$x < \frac{41}{26}$$

4) (4 points) Solve the following Equation.

$$|5x - 11| + 2 = 7$$

$$|5x - 11| = 5$$

$$5x - 11 = 5 \qquad\qquad 5x - 11 = -5$$

$$5x = 16 \qquad\qquad\qquad 5x = 6$$

$$x = \frac{16}{5} \qquad\qquad\qquad x = \frac{6}{5}$$

$$\boxed{x = \frac{16}{5}, \frac{6}{5}}$$

5) (5 points) Solve and graph

$$|5x + 2| \leq 28$$

$$-28 \leq 5x + 2 \leq 28$$
$$-2 \qquad -2 \qquad -2$$
$$-30 \leq 5x \leq 26$$

$$-6 \leq x \leq \frac{26}{5}$$

6) (5 points) Solve and graph

$$5|3w + 2| - 3 > 7$$

$$\underline{+3 \quad +3}$$

$$\frac{5|3w + 2|}{5} > \frac{10}{5}$$

$$|3w + 2| > 2$$

THIS MUST BE MORE THAN 2 UNITS FROM 0. IT CAN BE > 2 OR < -2
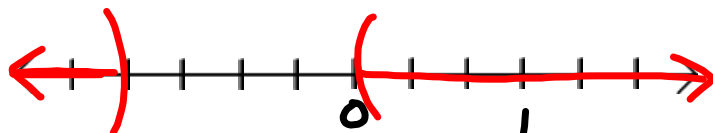
$3w + 2 < -2$ OR $3w + 2 > 2$

$3w < -4 \qquad\qquad 3w > 0$

$$\boxed{w < -\frac{4}{3} \quad \text{OR} \quad w > 0}$$

7) (5 points) Find the equation of the line passing through the points $(-2, 5)$ and $(\frac{1}{2}, \frac{-4}{3})$.

$$m = \frac{Y_2 - Y_1}{X_2 - X_1} = \frac{-\frac{4}{3} - 5}{\frac{1}{2} - (-2)} = \frac{-\frac{19}{3}}{\frac{5}{2}}$$

$$= \frac{-19}{3} \div \frac{5}{2} = \frac{-19}{3} \cdot \frac{2}{5} = \frac{-38}{15}$$

$$Y = \frac{-38}{15}X + b$$

$$5 = \frac{-38}{15}(-2) + b$$

$$5 = \frac{76}{15} + b$$

$$b = -\frac{1}{15}$$

$$\boxed{Y = -\frac{38}{15}X - \frac{1}{15}}$$

8) (5 points) Find the equation of the line passing through the point $(-4, -3)$ and that is parallel to the line $4x - 7y = 9$.

$$4x - 7y = 9$$

$$-7y = -4x + 9$$

$$y = \frac{4}{7}x - \frac{9}{7}$$

$$M = \frac{4}{7}$$

$$M_{\parallel} = \frac{4}{7}$$

$$y = \frac{4}{7}x + b$$

$$A_T \ (-4, -3)$$

$$-3 = \frac{4}{7}(-4) + b$$

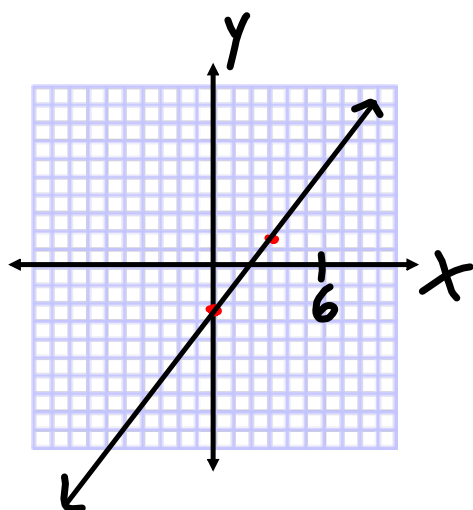$$-3 = -\frac{16}{7} + b$$

$$b = -\frac{5}{7}$$

$$\boxed{y = \frac{4}{7}x - \frac{5}{7}}$$

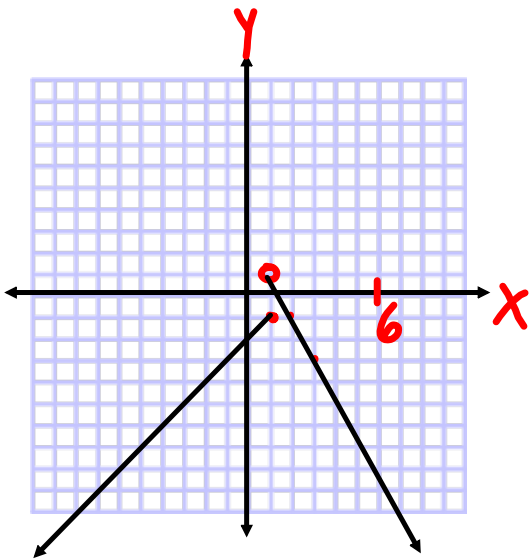9) (5 points) Graph the linear equation given below.

$$4x - 3y = 7$$

$$-3y = -4x + 7$$

$$y = \frac{4}{3}x - \frac{7}{3}$$

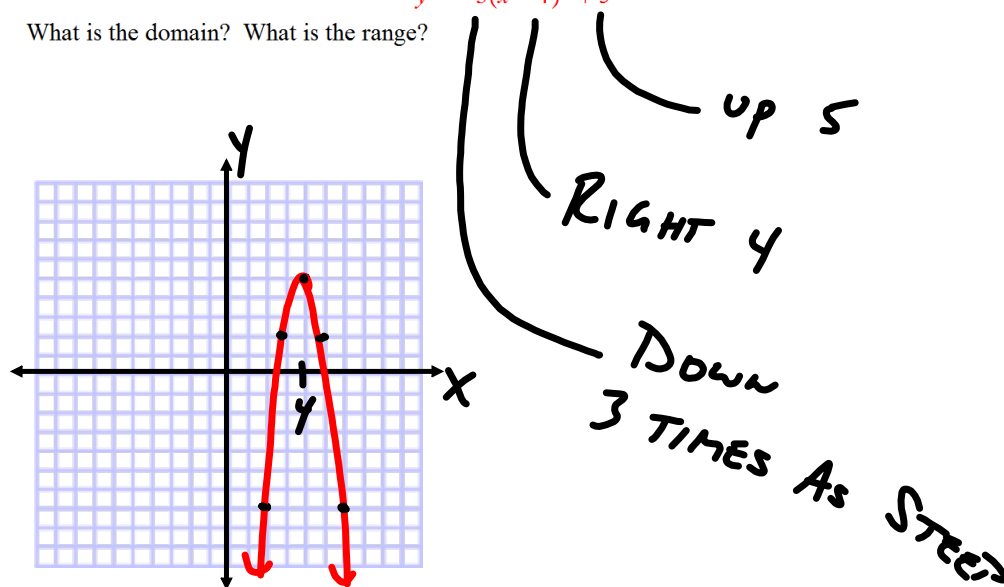10) (6 points) Graph the piecewise function given below.

$$f(x) = \begin{cases} x - 2 & \text{if } x \leq 1 \\ \\ -2x + 3 & \text{if } x > 1 \end{cases}$$

11) (6 points) Graph the equation given below by using translations (Horizontal and Vertical shifting).

$$y = -3(x-4)^2 + 5$$

What is the domain? What is the range?

UP 5

RIGHT 4

DOWN
3 TIMES AS STEEP

12) (5 points) Graph the inequality given below.

$$y < -2|x - 3| - 4$$

RIGHT 3

DOWN 4

OPENS DOWN
TWICE AS STEEP

DASHED
SHADED
BELOW
(SOLVED FOR y)