5) Solve the linear equation.

$$4x - 3(2x + 3) + 7x = 45$$

$4x - 6x - 9 + 7x = 45$

$5x - 9 = 45$

$5x = 54$

$$x = \frac{54}{5}$$

6) Solve the linear equation.

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

$5x + 15 - 12x + 9 = 5x$

$-7x + 24 = 5x$

$+7x \qquad +7x$

$24 = 12x$

$$x = 2$$

7) Solve the linear equation.

$$2(x - 8) - 4x = 5x - x + 14$$

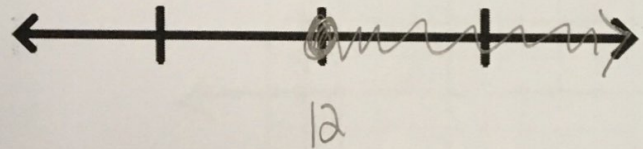$2x - 16 - 4x = 4x + 14$

$-2x - 16 = 4x + 14$

$-30 = 6x$

$-5 = x$

8) Solve the inequality & graph the solution set.

$$-4(x - 3) \le -36$$

$\dfrac{}{-4} \quad \dfrac{}{-4} \qquad x \ge 12$

$x - 3 \ge 9$

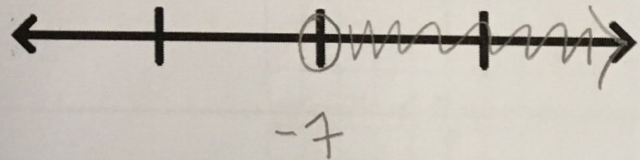12

9) Solve the inequality & graph the solution set.

$$4x - 7 < 8x + 21$$

$-4x - 21 \quad -4x \quad -21$

$-28 < 4x \qquad x > -7$

$-7 < x$

-7

10) Solve the absolute value equation.

$$|x - 6| = 13$$

① $x - 6 = 13$

$+6 \quad +6$

$x = 19$

② $x - 6 = -13$

$+6 \quad +6$

$x = -7$

11) Solve the absolute value equation.

$$4|x - 3| - 2 = 22$$

$+2 \ +2$

$\dfrac{4|x-3|}{4} = \dfrac{24}{4}$

$|x - 3| = 6$

① $x - 3 = 6$

$+3 +3$

$x = 9$
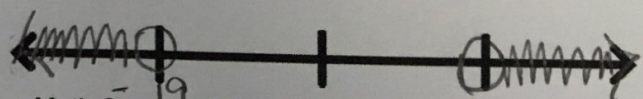
② $x - 3 = -6$

$+3 +3$

$x = -3$

12) Solve the absolute value inequality & graph the solution set.

$$|x + 4| - 6 < -21 \qquad |x + 4| < -15$$

$x + 4 < -15$ or $x + 4 > 15$

$x < -19$ or $x > 11$

$-19 \qquad 11$

13) Solve the absolute value inequality & graph the solution set.

$$2|x-2|+2<12$$
$$\underline{\,-2\quad-2}$$
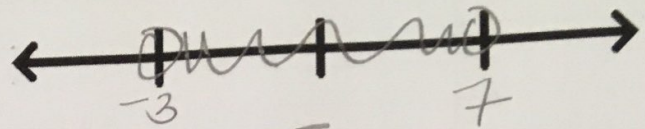
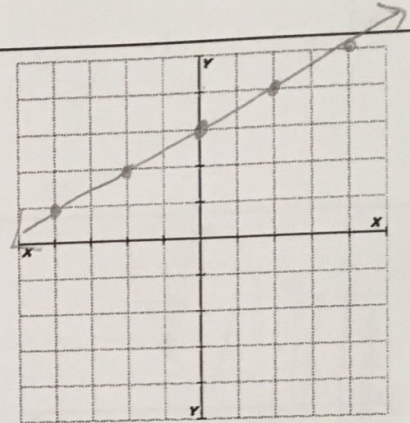$$2|x-2|<10$$

$$|x-2|<5$$

$$x-2<5 \text{ and } x-2>-5$$
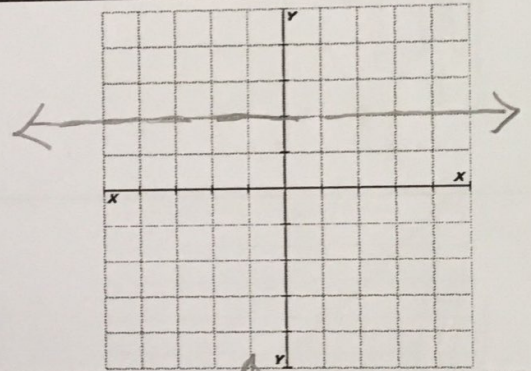$$x<7 \text{ and } x>-3$$

14) Graph the linear equation (slope-intercept form).
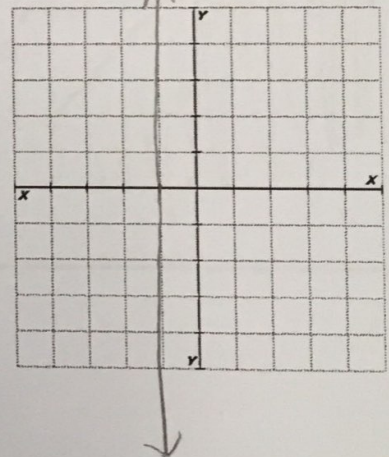
$$y=\frac{1}{2}x+3$$

15) Graph the linear equation.

$$y=2$$

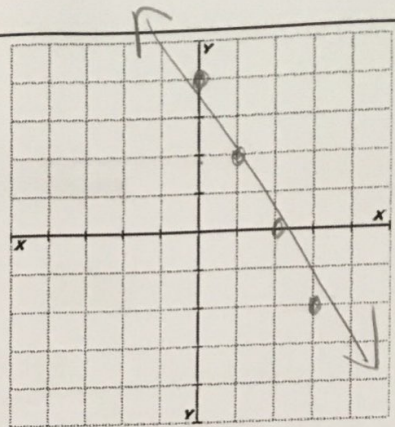**16)** Graph the linear equation.

$$x=-1$$

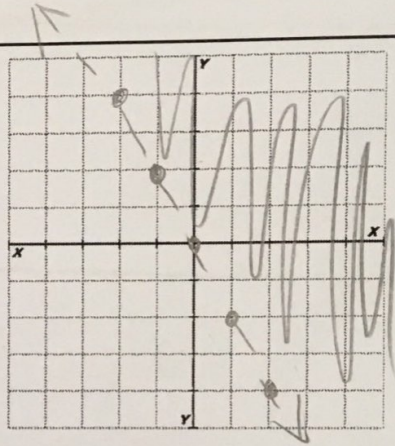**17)** Graph the linear equation (standard form).

$$4x + 2y = 8$$

$$\frac{2y}{2} = \frac{-4x + 8}{2} \quad \frac{}{2} \qquad y = -2x + 4$$

Hint: convert to slope-intercept form or use the x and y intercepts.

18) Graph the linear inequality (slope-intercept form).

$$y > -2x$$

19) Graph the linear inequality (slope-intercept form).

$$y \leq x + 1$$

20) Determine the slope of the line that goes through the points.

$(-5,6)$ & $(2,-7)$

$$m = \frac{-7 - 6}{2 - (-5)} = \boxed{\frac{-13}{7}}$$

21) Determine the slope of the line that goes through the points.

$(2,9)$ & $(-3,9)$

$$m = \frac{9 - 9}{-3 - 2} = \frac{0}{-5} \boxed{= 0}$$

22) Determine the slope of the line that goes through the points.

$(3,-5)$ & $(3,4)$

$$\frac{4 - (-5)}{3 - 3} = \frac{9}{0} = \boxed{\text{undefined}}$$

23) Find the equation for a line with the given properties.

Slope $= 0$ & containing the point $(3,4)$

$$y = 4$$

24) Find the slope-intercept equation for a line with the given properties.

Slope $= \dfrac{1}{3}$ & containing the point $(-9,7)$

$y = \frac{1}{3}x + b$

$7 = \frac{1}{3}(-9) + b$

$7 = -3 + b$

$10 = b$

$$y = \frac{1}{3}x + 10$$

25) Simplify using properties of exponents.

$\left(5x^2 y^5\right)\left(-2xy^8\right)$

$$-10x^3 y^{13}$$

26) Simplify using properties of exponents.

$\dfrac{27x^6 y^7}{6xy^{15}}$

$$\dfrac{9x^5}{2y^8}$$

27) Simplify using properties of exponents.

$\left(2x^4 y\right)^3 \left(-9x^4 y^3\right)$

$\left(8x^{12} y^3\right)\left(-9x^4 y^3\right) = \boxed{-72x^9 y^4}$

28) Multiply the polynomials.

$(5x-2)(2x-3)$

$10x^2 - 15x - 4x + 6$

$$10x^2 - 19x + 6$$

29) Factor the polynomial (greatest common factor).

$15x^3 + 21xy^2 - 3x^5$

$$3x\left(5x^2 + 7y^2 - x^4\right)$$

30) Factor the polynomial.

$x^2 + x - 42$

$$(x+7)(x-6)$$

31) Factor the polynomial.

$x^2 - 15x + 54$

$$(x-9)(x-6)$$

32) Factor the polynomial.

$2x^2 - 7x - 15$

$\left(\dfrac{\cancel{2x}}{2} - \dfrac{10}{2}\right)(2x + 3)$

$\boxed{(x-5)(2x+3)}$

33) Factor the polynomial.

$25x^2 - 81$

$\boxed{(5x-9)(5x+9)}$

34) Factor the polynomial.

$3x^2 - 21x + 36$

$3(x^2 - 7x + 12)$

$\boxed{3(x-4)(x-3)}$

35) Solve the system of equations by using substitution or elimination.

$\begin{cases} x = 12 - 7y \\ 3x - 5y = 10 \end{cases}$

$\boxed{(5,1)}$

$3(12 - 7y) - 5y = 10$

$36 - 21y - 5y = 10$

$36 - 26y = 10$

$-26y = -26$

$y = 1$

36) Solve the system of equations by using substitution or elimination.

$\begin{cases} x + y = 5 \\ x + 2y = 3 \end{cases}$

$x + y = 5$

$-x - 2y = -3$

$\overline{\quad -y = 2 \quad}$

$y = -2$

$x - 2 = 5$

$x = 7$

$\boxed{(7,-2)}$

37) Simplify the radical.

$\sqrt{28x^2 y^6 z^3}$

$4\sqrt{7}$

$\boxed{2xy^3 z^{\frac{3}{2}} \sqrt{7z}}$

38) Multiply the radicals and simplify.

$\sqrt{3x^3 y} \cdot \sqrt{6x}$

$\sqrt{18x^4 y}$

$9 \cdot 2$

$\boxed{3x^2 \sqrt{2y}}$

39) Multiply the radicals and simplify.

$\sqrt{3y} \cdot \sqrt{3y}$

$\boxed{3y}$

40) Multiply the radicals and simplify.

$3\sqrt[3]{16x^6} \cdot 2\sqrt[3]{4y^2}$

$6\sqrt[3]{64x^6 y^2}$

$\boxed{24x^2 \sqrt[3]{y^2}}$

41) Add the radicals.

$$7\sqrt{50} + 3\sqrt{18}$$

$\wedge$ $\wedge$

$35\sqrt{2}$ $9\sqrt{2}$

$35\sqrt{2} + 9\sqrt{2} = \boxed{43\sqrt{2}}$

42) Evaluate the function notation.

$$f(x) = 2x^2 + 2x - 7$$

Find $f(-3) =$

$2(-3)^2 + 2(-3) - 7$

$18 - 6 - 7$

$\boxed{5}$

43) Find the value of x in the function notation equation.
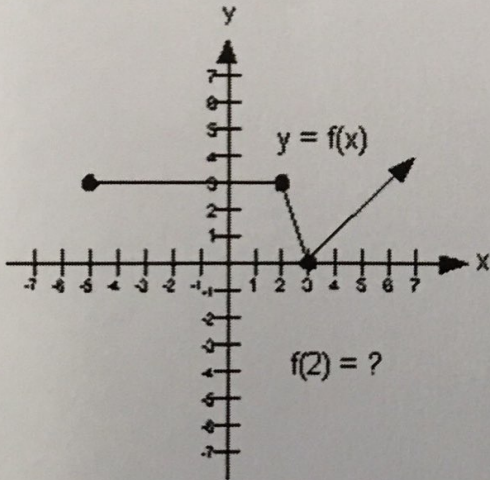
$$f(x) = 2x - 15$$

Find x so that $f(x) = -5$

$-5 = 2x - 15$

$10 = 2x$ $\boxed{X = 5}$

Use the graph of $p(x)$ to answer the following questions:

y = f(x)

f(2) = ?

44) Find $p(3) = 0$

45) Find $p(-1) = 3$

46) Find x so that $p(x) = 3$

$-5 \leq x \leq 2$