Algebra 2 // Topic 02 // Review Worksheet A

1 Find the y-int ⇝ $x=0$ ⟶ $(0,b)$

A) $5y = 5x - 15$

$5y = 5(0) - 15$

$\frac{5y}{5} = \frac{-15}{5}$

$y = -3$

$(0,-3)$

B) $2x - 6y = 24$

$2(0) - 6y = 24$

$\frac{-6y}{-6} = \frac{24}{-6}$

$y = -4$

$(0,-4)$

C) $y = \overset{m}{-3}x + \overset{b}{6}$

$(0,6)$

D) $2x = 3y + 6$

$2(0) = 3y + 6$

$0 = 3y + 6$

$\frac{-6}{} \quad \frac{-6}{}$

$\frac{-6}{3} = \frac{3y}{3}$

$y = -2$

$(0,-2)$

2 A) horizontal line thru $(-6,5)$

↓ think opposite of axis

↓ think "y"

$y = 5$

B) vertical line thru $(8,2)$

↓ think opposite of axis

↓ think "x"

$x = 8$

3 A) $\overset{x_1\ y_1}{(2,-1)}\overset{x_2\ y_2}{(4,8)}$

$m = \frac{8 - -1}{4 - 2}$

$m = \frac{9}{2}$

B) $\overset{x_1\ y_1}{(3,-6)}\overset{x_2\ y_2}{(-1,-6)}$

$m = \frac{-6 - -6}{-1 - 3}$

$m = \frac{-6+6}{-4}$

$m = \frac{0}{-4}$

$m = 0$

which means horizontal line

C) $\overset{x_1\ y_1}{(2,7)}\overset{x_2\ y_2}{(2,-3)}$

$m = \frac{-3 - 7}{2 - 2}$

$m = \frac{-10}{0}$

$m = \text{undefined}$

which means vertical line

4 steepest? → look for biggest slope

A) $y = \frac{3}{2}x - 2$ → 1.5

B) $y = -1\frac{3}{4}x + 4$ → 1.75

C) $y = -1.9x$ → 1.9

D) $y = 1.6x + 5$ → 1.6

→ ignore negatives and focus on magnitude. **C** is biggest after we converted all to decimals.

5 A) line b has $m = -4$. slope of line c?

$\parallel$ → parallel means "same slope", so $\boxed{m = -4}$

B) line j has $m = \frac{2}{5}$. slope of line j?

$\perp$ → perpendicular means "opposite reciprocal slope", so $\boxed{m = -\frac{5}{2}}$

6 A) Find x-int of $8x - 3y = 24$.

↳ $y = 0$ $\quad 8x - 3(0) = 24$

$\frac{8x}{8} = \frac{24}{8}$

$x = 3$ → $\boxed{(3, 0)}$

B) Find y-int of $-2x - y = -10$.

↳ $x = 0$ $\quad -2(0) - y = -10$

$(-1) - y = -10(-1)$

$y = 10$ → $\boxed{0, 10}$

7 Find slope. $3x - 5y = 2$

$-3x \quad -3x$

$-5y = -3x + 2$

$\frac{-5y}{-5} = \frac{-3x}{-5} + \frac{2}{-5}$

$y = \frac{3}{5}x - \frac{2}{5}$

→ $\boxed{m = \frac{3}{5}}$

8 which satisfies $2x - y < -8$

A) $(-4, 0)$ (x, y)

$2(-4) - 0 < -8$

$-8 - 0 < -8$

$-8 < -8$

not true

B) $(2, 4)$ (x, y)

$2(2) - 4 < -8$

$4 - 4 < -8$

$0 < -8$

not true

C) $(5, 2)$ (x, y)

$2(5) - 2 < -8$

$10 - 2 < -8$

$8 < -8$

not true

D) $(-6, 2)$ (x, y)

$2(-6) - 2 < -8$

$-12 - 2 < -8$

$-14 < -8$

true!

D

9 slope 3 thru $(-2, 5)$. (x_1, y_1)

↳ $m = 3$

$y - y_1 = m(x - x_1)$

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

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

$y - 5 = 3x + 6$

$\quad -5 \quad\quad -5$

→ $\boxed{y = 3x + 1}$

10 slope of $-\frac{3}{4}$ with y-int of 2.

↳ $m = -\frac{3}{4}$

↳ $(0, 2)$ (x_1, y_1) ...or $b = 2$

$y = mx + b$

$y = -\frac{3}{4}x + 2$

$y - y_1 = m(x - x_1)$

$y - 2 = -\frac{3}{4}(x - 0)$

$y - 2 = -\frac{3}{4}x$

$\quad +2 \quad\quad +2$

→ $\boxed{y = -\frac{3}{4}x + 2}$

11 Line thru $(2,5)$ and $(4,2)$

$x_1\ y_1$ $\quad$ $x_2\ y_2$

$$m = \frac{2-5}{4-2} = \frac{-3}{2}$$

$\longrightarrow$ $y - y_1 = m(x - x_1)$ using $(4,2)$

$y - 2 = -\frac{3}{2}(x-4)$

$y - 2 = -\frac{3}{2}x + \frac{12}{2}$

$y - 2 = -\frac{3}{2}x + 6$

$+2 \qquad +2$

$$\boxed{y = -\frac{3}{2}x + 8}$$

12 Line thru $(-1,5)$ and $\parallel$ to $\underbrace{(4,-3) \text{ and } (5,-1)}$.

$x_1\ y_1$ $\quad$ $x_2\ y_2$

$$m = \frac{-1 - -3}{5 - 4} = \frac{-1+3}{1}$$

$\leftarrow$ $m = 2$

$y - y_1 = m(x - x_1)$

$y - 5 = 2(x - -1)$

$y - 5 = 2(x+1)$

$y - 5 = 2x + 2$

$+5 \qquad +5$

$$\boxed{y = 2x + 7}$$

13 Line thru $(2,6)$ and $\perp$ to $\underbrace{(-5,8) \text{ and } (1,5)}$.

$x_1\ y_1$ $\quad$ $x_2\ y_2$

$$m = \frac{5-8}{1 - -5} = \frac{-3}{1+5} = \frac{-3}{6}$$

$m = -\frac{1}{2}$

($\perp$ means $m = 2$ (opposite reciprocal))

$y - y_1 = m(x - x_1)$

$y - 6 = 2(x-2)$

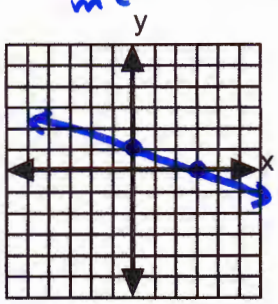
$y - 6 = 2x - 4$

$+6 \qquad +6$

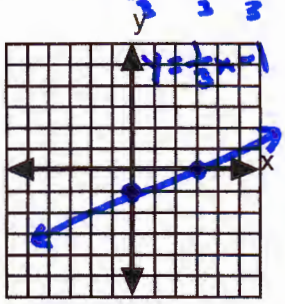
$$\boxed{y = 2x + 2}$$

14) Sketch the line graph from the given information.

A) $y = -\frac{1}{3}x + 1$

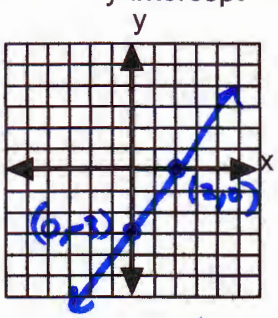


B) $-x + 3y = -3$

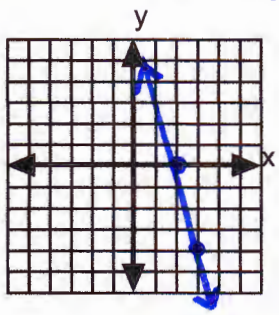


C) x-intercept = 2

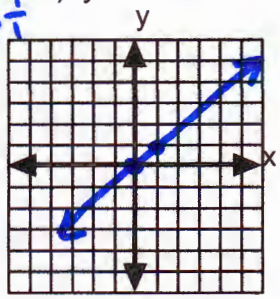
y-intercept = -3



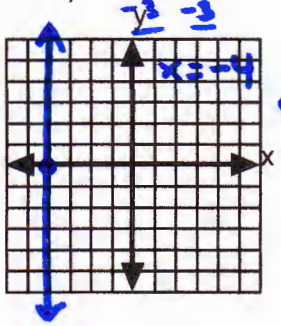
D) Contains $m = -4$ $(2,0)$



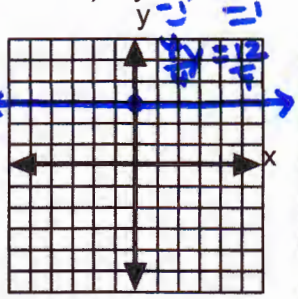
E) $y = x$



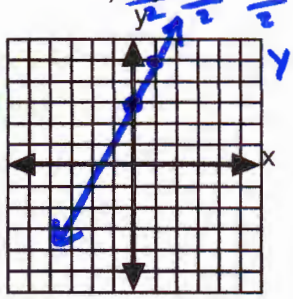
F) $x + 3 = -1$



G) $4y + 1 = 13$

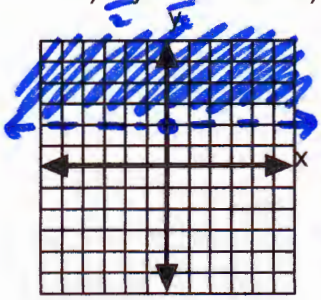


H) $2y = 4x + 6$

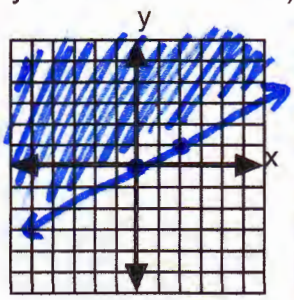


15) Sketch the graph of each of the following inequalities.

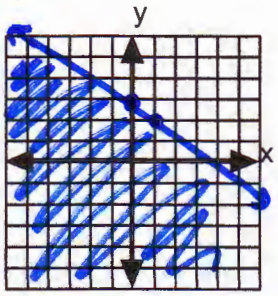
A) $2y > 4$



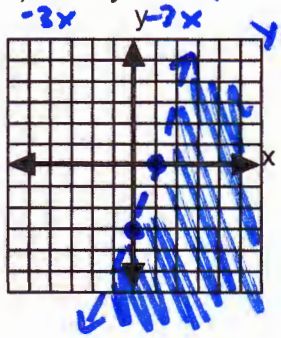
B) $y \geq \frac{1}{2}x$



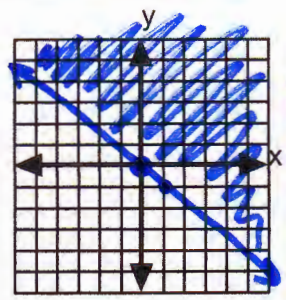
C) $y \leq -x + 3$



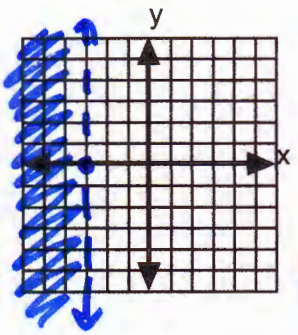
D) $3x - y > 3$



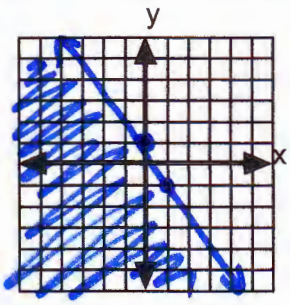
E) $y \geq -x$



F) $3x < 9$



G) $2y \leq -4x + 2$



H) $y > x + 2$