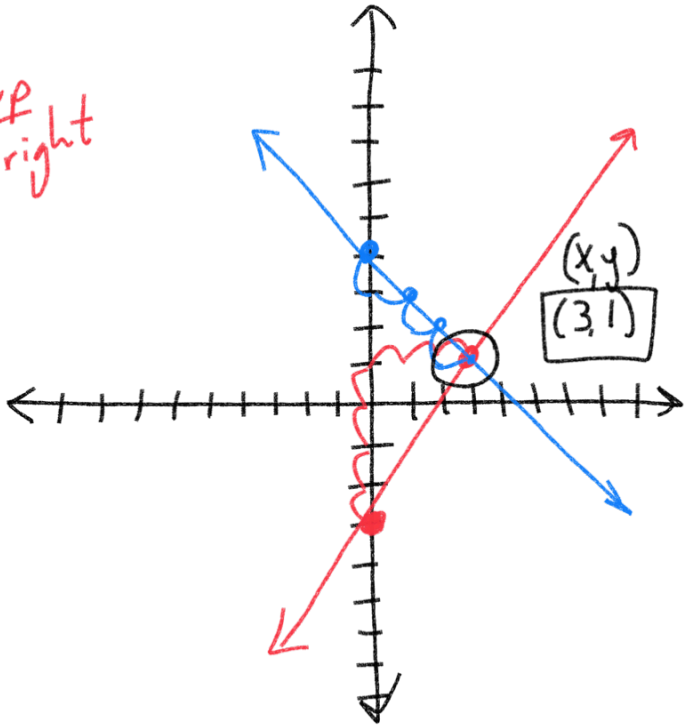
T-A2 Algebra 2 Week 16 1/10

1.) $y = \frac{4}{3}x - 3$ ← y-int

slope $\frac{4}{3}$ = 4 up / 3 right

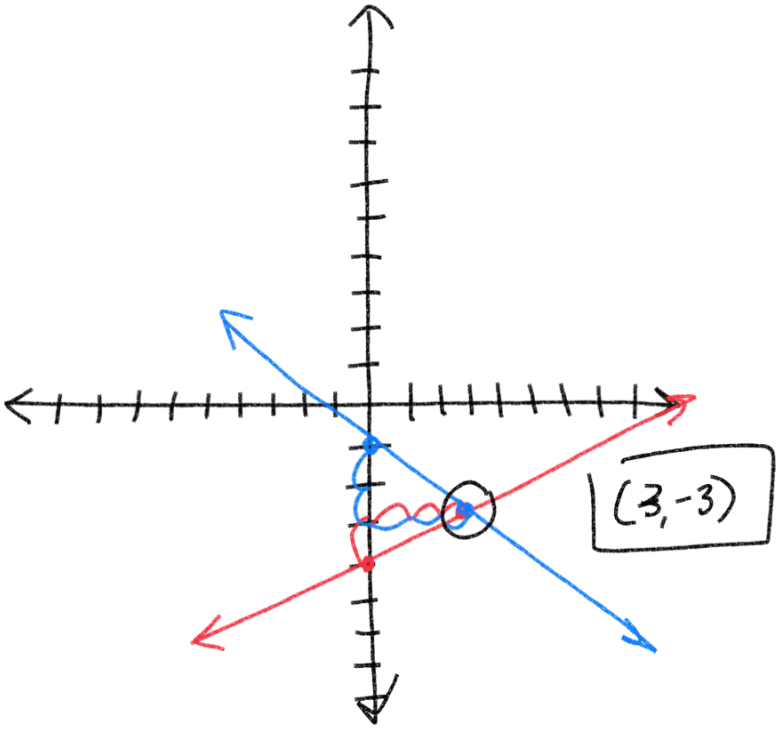
$y = -x + 4$ ← y-int

slope = -1 = down 1 / right 1



2.) $y = \frac{1}{3}x - 4$

$y = \frac{-2}{3}x - 1$



$-4x - 2y = 20$

$\rightarrow x - y = -2$

Substitution

$x - y = -2$

$+y \quad +y$

$\boxed{x = y - 2}$

$-4\boxed{x} - 2y = 20$

$-4(y-2) - 2y = 20$

$-4y + 8 - 2y = 20$

$-6y + 8 = 20$

$-8 \quad -8$

$\frac{-6y}{-6} = \frac{12}{-6}$

$\boxed{y = -2}$

$x - y = -2$

$x - (-2) = -2$

$x + 2 = -2$

$-2 \quad -2$

$\boxed{x = -4}$

$(-4, -2)$

$x + 5y = -23$

$\{ 3x - 6y = 15$

$3(x) - 6y = 15$

$3(-5y - 23) - 6y = 15$

$\{ -15y - 69 - 6y = 15$

$-21y - 69 = 15$

$+69 \quad +69$

$\frac{-21y}{-21} = \frac{84}{-21}$

$\boxed{y = -4}$

$x + 5y = -23$

$-5y \quad -5y$

$x = \boxed{-5y - 23}$

$x = -5(-4) - 23$

$x = 20 - 23$

$\boxed{x = -3}$

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

Elimination

$$-3\,(x + 5y = -23)$$
$$3x - 6y = 15$$

terms are equal, but with opposite signs

$$\begin{aligned} -3x - 15y &= 69 \\ +\ 3x - 6y &= 15 \\ \hline 0 \quad -21y &= 84 \end{aligned}$$

$$\frac{-21y}{-21} = \frac{84}{-21}$$

$$\boxed{y = -4}$$

$$x + 5y = -23$$
$$x + 5(-4) = -23$$
$$x - 20 = -23$$
$$+20 \qquad +20$$
$$\boxed{x = -3}$$

$$6\,(x + 5y = -23)$$
$$5\,(3x - 6y = 15)$$

$$\begin{aligned} 6x + 30y &= -138 \\ +\ 15x - 30y &= 75 \\ \hline 21x &= -63 \end{aligned}$$

$$\frac{21x}{21} = \frac{-63}{21}$$

$$\boxed{x = -3}$$

$-2(2x - 2y = -8)$

$4x - 5y = -15$

$-4x + 4y = 16$

$+ \quad 4x - 5y = -15$

$-y = 1$

$\frac{-y}{-1} = \frac{1}{-1}$

$\boxed{y = -1}$

$2x - 2y = -8$

$2x - 2(-1) = -8$

$2x + 2 = -8$

$-2 \quad -2$

$\frac{2x}{2} = \frac{-10}{2}$

$\boxed{x = -5}$

$5(2x - 2y = -8)$

$-2(4x - 5y = -15)$

$10x - 10y = -40$

$-8x + 10y = 30$

$2x = -10$

$\frac{2x}{2} = \frac{-10}{2}$

$\boxed{x = -5}$

$2x - 2y = -8$

$2(-5) - 2y = -8$

$-10 \quad -2y = -8$

$+10 \quad +10$

$\frac{-2y}{-2} = \frac{2}{-2}$

$\boxed{y = -1}$

$-3(4x - y = -10)$

$-8x \quad -3y = 10$

$-12x + 3y = 30$

$+ \; -8x - 3y = 10$

$-20x = 40$

$\frac{-20x}{-20} = \frac{40}{-20}$

$\boxed{x = -2}$

$2(4x + y = -10)$

$-8x \quad -3y = 10$

4, 8, 12, 16, 20, ...

8, 16, 24, 32, ...

$-8x - 2y = -20$

$+ \; -8x - 3y = 10$

$-5y = -10$

$\frac{-5y}{-5} = \frac{-10}{-5}$

$\boxed{y = 2}$