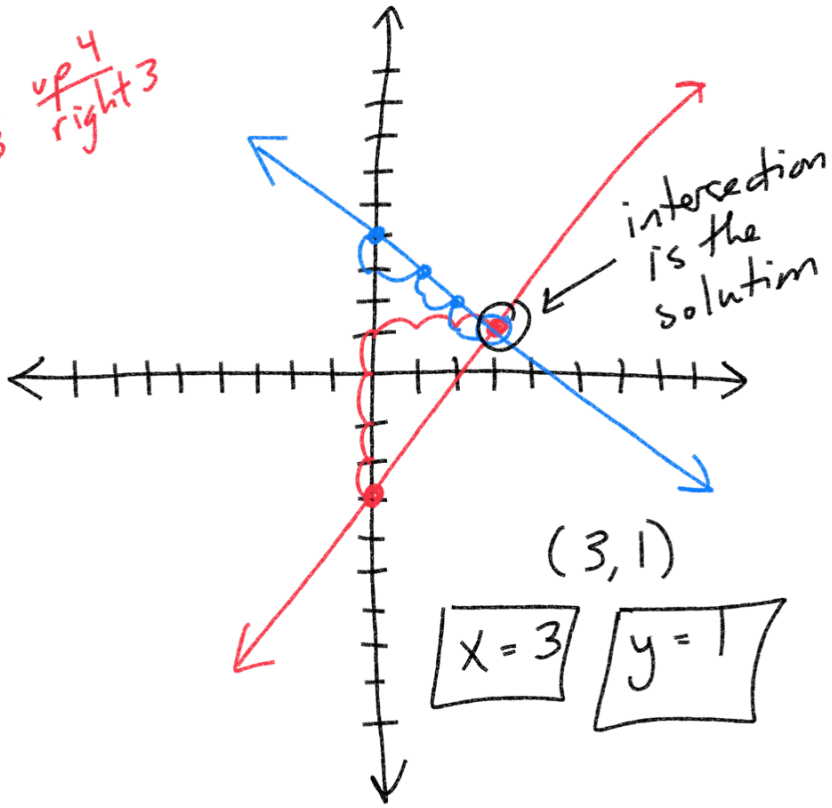
S-AZ Algebra 2 Session 12 7/18

1.) $y = \frac{4}{3}x - 3$ — y-int; slope $= \frac{4}{3}$ up 4 / right 3

$y = -x + 4$ — y-int; slope $= -1$ down 1 / right 1



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

$+3 \qquad +3$

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

$+x \qquad +x$

$\frac{4}{3}x + \frac{3}{3}x = 7$

$\frac{3}{7}\left(\frac{7}{3}x\right) = (7)\frac{3}{7}$

$x = 3$

$(3, 1)$

$x = 3$ $\quad y = 1$

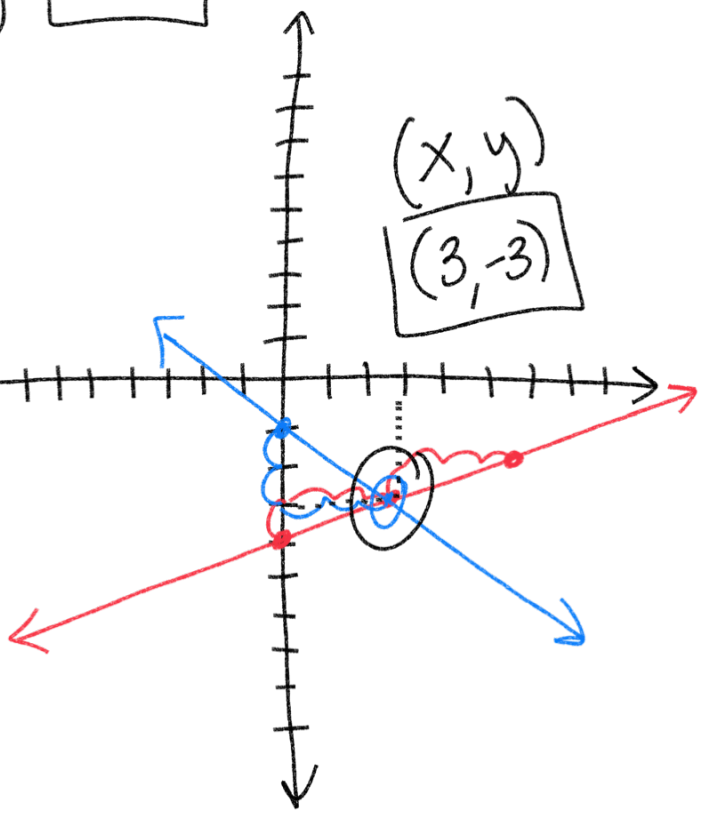
$f(x) = -x + 4$

$f(3) = -3 + 4$

$y = 1$

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

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



(x, y)

$(3, -3)$

Substitution

$-4x - 2y = 20$

$x - y = -2$

$x - y = -2$

$+y \quad +y$

$x = y - 2$

$-4x - 2y = 20$

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

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

$-6y + 8 = 20$

$-8 \quad -8$

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

$y = -2$

$x = y - 2$

$x = -2 - 2$

$x = -4$

$(-4, -2)$

$x + 5y = -23$

$3x - 6y = 15$

$$x + 5y = -23$$
$$3x - 6y = 15$$

$$x + 5y = -23$$
$$-5y \quad -5y$$
$$x = -5y - 23$$

$$3x - 6y = 15$$
$$3(-5y - 23) - 6y = 15$$
$$-15y - 69 - 6y = 15$$
$$-21y - 69 = 15$$
$$+69 \quad +69$$
$$\frac{-21y}{-21} = \frac{84}{-21}$$
$$\boxed{y = -4}$$

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

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

Elimination

terms are equal, but have an opposite sign.

$-3\left(x + 5y = -23\right)$

$3x - 6y = 15$

$-3x - 15y = 69$

$+\ 3x - 6y = 15$

$0 - 21y = 84$

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

$y = -4$

$x + 5y = -23$

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

$x - 20 = -23$

$+20 \quad +20$

$x = -3$

$6\left(x + 5y = -23\right)$

$5\left(3x - 6y = 15\right)$

$6x + 30y = -138$

$+\ 15x - 30y = 75$

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

$x = -3$

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

$4x - 5y = -15$

$-4x + 4y = 16$

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

$-y = 1$

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

$y = -1$

$(-5, -1)$

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

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

$10y$

$-10y$

$2x - 2y = -8$

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

$2x + 2 = -8$

$-2 \quad -2$

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

$x = -5$

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

$-8x - 3y = 10$

$4x \quad \times 2 \quad +8x \quad -8x$

$8x - 2y = -20$

$-8x - 3y = 10$

$-5y = -10$

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

$y = 2$

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

$-8x - 3y = 10$

$3y$

$-3y$

$4x - y = -10$

$4x - 2 = -10$

$+2 \quad +2$

$\frac{4x}{4} = \frac{-8}{4}$

$x = -2$

$2(6x + 9y = 0)$ $\quad 12x$

$-12x - 5y = -26$ $\quad -12x$

$\Downarrow$

$8(-5x - 10y = -20)$ $= -40x$

$5(8x + 4y = 20)$ $\quad 40x$

$$\frac{-5x}{5} - \frac{10y}{5} = \frac{-20}{5} = -x - 2y = -4$$

$$\frac{8x}{4} + \frac{4y}{4} = \frac{20}{4} \qquad 2x + y = 5$$

$$-\frac{5x}{5} - \frac{10y}{5} = -\frac{20}{5} \qquad -x \boxed{-2y} = -4$$

$$\frac{8x}{2} + \frac{4y}{2} = \frac{20}{2} \qquad 4x \boxed{+2y} = 10$$