

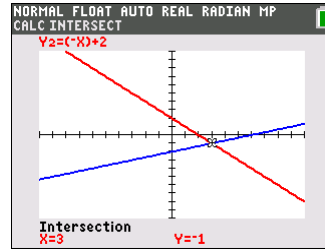
Review of Solving Systems of Equations

① Graphing (by hand or using graphing calc)

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

$$y = -x + 2$$

Solution is  $(3, -1)$



② Comparison

$$y = 2x + 7$$

$$y = -x - 5$$

look for the same thing in each equation

The solution is  $(-4, -1)$

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

$$\frac{3x}{3} = \frac{-12}{3}$$

$$x = -4$$

Sub  $x = -4$  into  $y = 2x + 7$

$$y = 2(-4) + 7$$

$$y = -8 + 7$$

$$y = -1$$

$$2y = x + 12$$

$$-4x + 2y = 18$$

$$-4x + (x + 12) = 18$$

$$-4x + x + 12 = 18$$

$$-3x = 6$$

$$x = -2$$

Sub  $x = -2$  into

$$2y = x + 12$$

$$2y = -2 + 12$$

$$2y = 10$$

$$y = 5$$

The solution is  $(-2, 5)$

③ Substitution

$$2x + 3y = 13$$

$$y = 4x - 5$$

$$2x + 3(4x - 5) = 13$$

$$2x + 12x - 15 = 13$$

$$14x = 28$$

$$x = 2$$

Sub  $x = 2$  into

$$y = 4x - 5$$

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

$$y = 8 - 5$$

$$y = 3$$

The solution is  $(2, 3)$

③ Substitution (continued)

$$\begin{aligned} 4x + 2y &= 8 \rightarrow 2y = -4x + 8 \\ -2x + 3y &= 20 \end{aligned}$$

$$-2x + 3(-2x + 4) = 20$$

$$-2x - 6x + 12 = 20$$

$$-8x = 8$$

$$x = -1$$

The solution is  $(-1, 6)$

sub into  $4x + 2y = 8$

$$4(-1) + 2y = 8$$

$$-4 + 2y = 8$$

$$2y = 12$$

$$y = 6$$

④ Elimination

$$\begin{array}{r} 2x + 3y = 5 \\ 3x - 3y = 10 \\ \hline 5x = 15 \\ x = 3 \end{array}$$

The solution is  $(3, -\frac{1}{3})$

sub into  $2x + 3y = 5$

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

$$6 + 3y = 5$$

$$3y = -1$$

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

Solve using elimination:

$$\begin{aligned} 2x + 3y &= 6 \\ -2(x + 2y) &= -10 \end{aligned} \Rightarrow \begin{array}{r} 2x + 3y = 6 \\ -2x - 4y = -10 \\ \hline -y = -4 \\ y = 4 \end{array}$$

sub  $y = 4$  into  $x + 2y = 5$

$$x + 2(4) = 5$$

$$x + 8 = 5$$

$$x = -3$$

The solution is

$(-3, 4)$