

Substitution: solve for one variable, then substitute variable into other equation

$$\begin{cases} 3x + 2y = 9 \\ y = 4x + 2 \end{cases} \leftarrow \text{solved for } y$$

$$y = 4x + 2$$

other equation $3x + 2y = 9$

\leftarrow plug in $y = 4x + 2$

$$3x + 2(4x + 2) = 9$$

$$3x + 8x + 4 = 9$$

$$11x = 5$$

$$x = \frac{5}{11}$$

Now plug $x = \frac{5}{11}$ into either equation $y = 4x + 2$
 $3x + 2y = 9$

Solve for y . $y = 4\left(\frac{5}{11}\right) + 2$

$$= \frac{20}{11} + 2$$

$$= \frac{20}{11} + \frac{22}{11}$$

$$= \frac{42}{11}$$

$$\left(\frac{5}{11}, \frac{42}{11}\right)$$

Elimination: you want to "Eliminate" one variable

$$\begin{cases} 4x + 2y = 9 \\ -3x - y = 7 \end{cases}$$

$$-3x - y = 7$$

Notice that the "y" are opposite signs

$$4x + 2y = 9$$

$$2(-3x - y = 7)$$

will make the "y" become ~~the~~ eliminated

$$4x + 2y = 9$$

$$\underline{-6x - 2y = 14}$$

$$-2x + 0y = 23$$

$$-2x = 23$$

$$x = -\frac{23}{2}$$

Now you plug $x = -\frac{23}{2}$ into either equation.