

3.8 Solving Systems of Equations by Substitution (algebraically)

$$\begin{aligned} y &= 2x \\ y &= 4x - 2 \end{aligned}$$
$$\begin{array}{r} 2x = 4x - 2 \\ -4x = -4x \\ \hline -2x = -2 \\ \underline{-2} \quad \underline{-2} \\ x = 1 \end{array}$$

$$y = 2(1)$$
$$y = 2$$

$$\begin{pmatrix} x & y \\ 1 & 2 \end{pmatrix}$$

or

$$\begin{aligned} y &= 4(1) - 2 \\ y &= 4 - 2 \\ y &= 2 \end{aligned}$$

Review

systems of equations

$$y = x + 4$$

$$y = 3x$$

$$3x = x + 4$$

$$-x = -x$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

ans:

$$\begin{pmatrix} x & y \\ 2 & 6 \end{pmatrix}$$

$$y = 2 + 4$$

$$y = 6$$

$$\begin{cases} y = 5x - 7 \\ -3x - 2y = -12 \end{cases}$$

$$-3x - 2(5x - 7) = -12$$

$$-3x - 10x + 14 = -12$$

$$-13x + 14 = -12$$

$$-14 = -14$$

$$\frac{-13x}{-13} = \frac{-26}{-13}$$

$$x = 2$$

ans:

$$\begin{pmatrix} x & y \\ 2 & 3 \end{pmatrix}$$

$$y = 5x - 7$$

$$y = 5(2) - 7$$

$$y = 10 - 7$$

$$y = 3$$