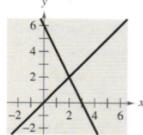


## 7-1,2 Solutions

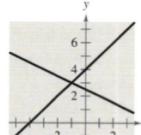
Solve each system with the Substitution method or the Linear Transformation method. You may choose to check them with your graphing calculator.

$$1. \begin{cases} 2x + y = 6 \\ -x + y = 0 \end{cases}$$



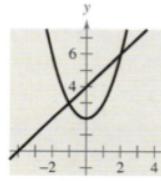
$$\left\{ \begin{array}{l} y = 2 \\ (1, 2) \end{array} \right\}$$

$$2. \begin{cases} x - y = -4 \\ x + 2y = 5 \end{cases}$$



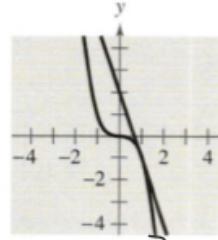
$$\left\{ \begin{array}{l} x = -1 \\ y = 3 \end{array} \right\}$$

$$3. \begin{cases} x - y = -4 \\ x^2 - y = -2 \end{cases} \rightarrow \begin{cases} y = x + 4 \\ x^2 - y = -2 \end{cases}$$



$$\left\{ \begin{array}{l} (2, 6) \\ (-1, 3) \end{array} \right\}$$

$$4. \begin{cases} 3x + y = 2 \\ x^3 + y = 0 \end{cases} \rightarrow \begin{cases} y = 2 - 3x \\ x^3 + (-3x + 2) = 0 \end{cases}$$



$$\left\{ \begin{array}{l} (1, -1) \\ (-2, 8) \end{array} \right\}$$

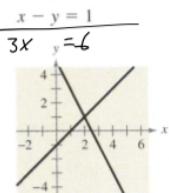
either use calculator or synthetic division.

$$\begin{array}{r} + | -1 | 0 \\ \hline 2 | 1 \quad 0 \quad -3 \quad 2 \\ \quad 1 \quad 1 \quad -2 \quad 0 \\ \hline \quad 0 \quad 1 \quad -2 \quad 0 \end{array} \quad \Phi \pm 1, 2$$

double Root

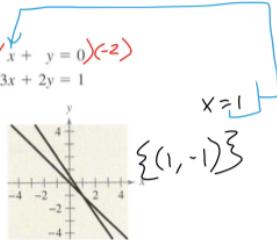
$$\begin{aligned} x^3 + x - 2 &= 0 \\ (x+2)(x-1)^2 &= 0 \end{aligned} \quad x = 1, -2$$

$$1. \begin{cases} 2x + y = 5 \\ x - y = 1 \end{cases}$$



$$\left\{ \begin{array}{l} (1, 2) \end{array} \right\}$$

$$3. \begin{cases} x + y = 0 \\ 3x + 2y = 1 \end{cases} \rightarrow$$



$$\left\{ \begin{array}{l} (1, -1) \end{array} \right\}$$

$$7. \begin{cases} 3x - 2y = 5 \\ -6x + 4y = -10 \end{cases}$$

$$\begin{array}{r} 6x - 4y = 10 \\ -6x + 4y = -10 \\ \hline 0 = 0 \end{array}$$

infinite solutions

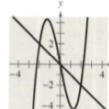
$$17. \begin{cases} \frac{1}{2}x + \frac{1}{2}y = 8 \\ x + y = 20 \end{cases} \rightarrow \begin{cases} 2x + 5y = 80 \\ -2x - 2y = -40 \end{cases}$$

$$\begin{array}{r} 3y = 40 \\ y = \frac{40}{3} \end{array}$$

$$22. \begin{cases} \frac{2}{3}x + \frac{1}{6}y = \frac{2}{3} \\ 4x + y = 4 \end{cases} \rightarrow$$

- infinite solutions

$$6. \begin{cases} x + y = 0 \\ x^3 - 5x - y = 0 \end{cases} \rightarrow$$



$$\left\{ \begin{array}{l} (0, 0) \\ (-2, 2) \\ (2, -2) \end{array} \right\}$$

$$27. \begin{cases} 0.05x - 0.03y = 0.21 \\ 0.07x + 0.02y = 0.16 \end{cases}$$

$$\begin{array}{r} .1x - .06y = .42 \\ .21x + .06y = .48 \\ \hline .31x = .90 \\ x = \frac{90}{31} = \frac{90}{31} \end{array}$$

sORRY! :)

$$\begin{array}{r} .05\left(\frac{90}{31}\right) - .03y = .21 \\ \frac{4.5}{31} - .03y = .21 \\ -.03y = \frac{2.61}{31} \end{array}$$

$$y = \frac{67}{31}$$

$$\left\{ \begin{array}{l} \left(\frac{90}{31}, \frac{67}{31}\right) \end{array} \right\}$$

Schmikes!

- 6)  $\emptyset$   
 20)  $\emptyset$   
 67) 6m x 9m  
 69) 9m x 12m  
 61) \$5,000  
 62) \$5,000  
 38)  $\{(-4, 5)\}$   
 53) 6.667L and 3.333L

### Challenge Problems.

8.  $y = -2x^2 + 2$

$$y = 2(x^4 - 2x^2 + 1)$$

$$\begin{aligned} -2x^2 + 2 &= 2(x^4 - 2x^2 + 1) \\ -x^2 + 1 &= x^4 - 2x^2 + 1 \\ 0 &= x^4 - x^2 \\ 0 &\approx x^2(x^2 - 1) \\ 0 &\approx x \pm 1 = x \end{aligned}$$

$$\{(0, 2), (-1, 0), (1, 0)\}$$

27.  $x + y = 4 \rightarrow y = -x + 4$

$$x^2 + y^2 - 4x = 0$$

$$\begin{aligned} x^2 + (-x+4)^2 - 4x &= 0 \\ x^2 + x^2 - 8x + 16 - 4x &= 0 \\ (2x^2 - 12x + 16) &= 0 \quad (\text{FOIL}) \\ x^2 - 6x + 8 &= 0 \\ (x-4)(x-2) &= 0 \end{aligned}$$

$$\begin{cases} (4, 0) \\ (2, 2) \end{cases}$$

$$x = 4, 2$$

47.  $y = e^{-x} = 1 \rightarrow y = 1 + e^{-x}$

$$y - \ln x = 3$$

$$\begin{aligned} 1 + e^{-x} - \ln x &= 3 \\ e^{-x} - \ln x &= 2 \end{aligned}$$

Need calc!

