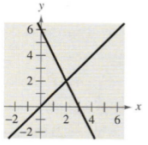
7-1,2 Solutions

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

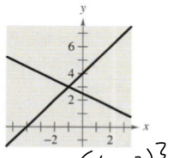
1. $2x + y = 6$
$-x + y = 0$



$y = 2$

$(2, 2)$

2. $x - y = -4$
$x + 2y = 5$



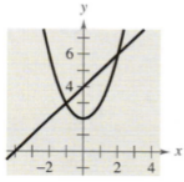
$x = -1$

$y = 3$

$\{(-1, 3)\}$

3. $x - y = -4 \rightarrow y = x + 4$
$x^2 - y = -2$

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



$x = 2 \quad x = -1$

$\{(2, 6), (-1, 3)\}$

4. $3x + y = 2 \rightarrow y = -3x + 2$
$x^3 + y = 0$

$x^3 - (-3x + 2) = 0$

$x^3 - 3x + 2$

either use Calculator or Synthetic division.

	1	0	−3	2
1		1	1	−2
	1	1	−2	0

±	−	i
2 | 1	1	0
0	1	2

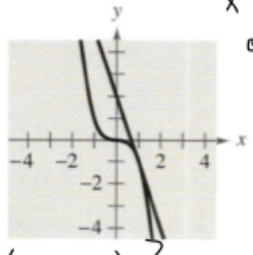
① $\pm 1, 2$

double Root

$x^2 + x - 2 = 0$

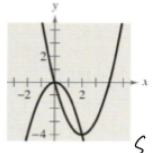
$(x+2)(x-1) = 0$

$x = 1, -2$



$\{(1, -1), (-2, 8)\}$

7. $x^2 + y = 0 \rightarrow y = -x^2$
$x^2 - 4x - y = 0$

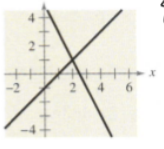


$x = 0 \quad x = 2$

$\{(0, 0), (2, -4)\}$

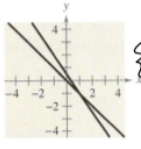
1. $2x + y = 5$
$x - y = 1$

$3x = 6$



$\{(2, 1)\}$

3. $x + y = 0 \quad (-2)$
$3x + 2y = 1$



$x = 1$

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

7. $3x - 2y = 5 \quad (2)$
$-6x + 4y = -10$

$6x - 4y = 10$
$-6x + 4y = -10$

$0 = 0$

infinite Solutions

17. $\frac{1}{5}x + \frac{1}{2}y = 8 \quad (10) \rightarrow 2x + 5y = 80$
$x + y = 20 \quad (-2) \quad -2x - 2y = -40$

$3y = 40$

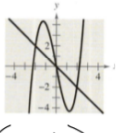
$y = \frac{40}{3}$

$\left\{\left(\frac{20}{3}, \frac{40}{3}\right)\right\}$

22. $\frac{2}{3}x + \frac{1}{6}y = \frac{2}{3} \quad (6) \rightarrow$
$4x + y = 4 \quad (-1) \rightarrow$

infinite Solutions

6. $x + y = 0 \quad y = -x$
$x^3 - 5x - y = 0$



$x = 0 \quad x = \pm 2$

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

27. $0.05x - 0.03y = 0.21 \quad (2)$
$0.07x + 0.02y = 0.16 \quad (3)$

$.1x - .06y = .42$
$.21x + .06y = .48$

$.31x = .90$

$x = \frac{.90}{.31} = \frac{90}{31}$

SORRY! ☺

$.05\left(\frac{90}{31}\right) - .03y = .21$

$\frac{45}{31} - .03y = .21$

$-.03y = \frac{201}{3100}$

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

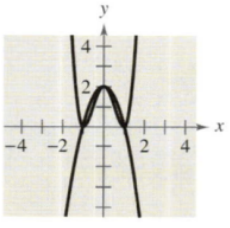
$\left\{\left(\frac{90}{31}, \frac{67}{31}\right)\right\}$

Shnikes!

6) ø
20) ø
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. $y = -2x^2 + 2$
$y = 2(x^4 - 2x^2 + 1)$



$-2x^2+2 = 2(x^4-2x^2+1)$ $\frac{1}{2}$
$-x^2+1 = x^4-2x^2+1$
$0 = x^4-x^2$
$0 = x^2(x^2-1)$
$0 = x \quad \pm 1 = x$
$\{(0,2)(-1,0)(1,0)\}$

27. $x + y = 4 \rightarrow y = -x+4$
$x^2 + y^2 - 4x = 0$
$x^2 + (-x+4)^2 - 4x = 0$
FOIL
$x^2 + x^2 - 8x + 16 - 4x = 0$
$(2x^2 - 12x + 16 = 0)(\frac{1}{2})$
$x^2 - 6x + 8 = 0$
$(x-4)(x-2) = 0$
$x = 4, 2$
$\{(4,0)$
$(2,2)\}$

47. $y - e^{-x} = 1 \rightarrow y = 1 + e^{-x}$
$y - \ln x = 3$
$1 + e^{-x} - \ln x = 3$
$e^{-x} - \ln x = 2$
Need calc!

Zoom Box