A25 3-5

p. 136 – 138 / 1, 11–16, 19, 33, 34, 49, 50, 51, 55, 57

Key

(11) (−4, 1)

(12) no solution

(13) (1, 4) and (9, 4)

(14) (−4, 0) and (1, 5)

(15) (3, 8) and (−1, 4)

15. $y = x + 5$ and $y = x^2 - x + 2$

$x + 5 = x^2 - x + 2$

$-x \quad -5 \quad = \quad -x \quad -5$

$0 = x^2 - 2x - 3$

-3×1, $-3 + 1 = -2$

$0 = (x - 3)(x + 1)$

$x = 3$ and $x = -1$

$y = 8$ $\quad y = 4$

(16) (0, 7) and (7, 0)

16. $x^2 + y^2 = 49$ and $y = 7 - x$

$x^2 + (7 - x)^2 = 49$

$x^2 + 49 - 14x + x^2 = 49$

$-49 \quad = -49$

$2x^2 - 14x = 0$

$\div 2 \quad = 0 \div 2$

$x^2 - 7x = 0$

$x(x - 7) = 0$

$x = 0$ and $x = 7$

$y = 7$ $\quad y = 0$

(19) no solution

19. $2x^2 + 4x - y = -3$ and $-2x + y = -4$

$+2x \quad = +2x$

$y = 2x - 4$

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

$2x^2 + 4x - 2x + 4 = -3$

$+3 \quad +3$

$2x^2 + 2x + 7 = 0$

$x = \dfrac{-(-6) \pm \sqrt{36 - 4(2)(7)}}{2(2)}$

(33) (−6, −4) and (−4, −4)

33. $y = -3x^2 - 30x - 76$

$-(y = 2x^2 + 20x + 44)$

$0 = -5x^2 - 50x - 120$

$\div -5 \quad = \quad \div -5$

$0 = x^2 + 10x + 24$

6×4, $6 + 4 = 10$, $6 \cdot 4 = 24$

$0 = (x + 6)(x + 4)$

$x = -6$ and $x = -4$

$y = -4$ $\quad y = -4$

now find y:

$2(-6)^2 + 20(-6) + 44$

$2(-4)^2 + 20(-4) + 44$

(34) (4, −5)

34. $-10x^2 + y = -80x + 155$

$-(5x^2 + y = 40x - 85)$

$\dfrac{-15x^2}{-15} = \dfrac{-120x + 240}{-15}$

$x^2 = 8x - 16$

$x^2 - 8x + 16 = 0$

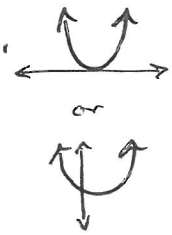
-4×-4, $-4 + -4 = -8$, $-4 \cdot -4 = 16$

$(x - 4)(x - 4) = 0$

$x = 4$

$5(16) + y = 40(4) - 85$

$y = -5$

49. 

or

If both $y =$ or $x =$ Then intersect at vertex

50. $x^2 + y^2 = 1620$ $\quad y = -\frac{1}{3}x + 30$ $\quad -3y = x - 90$

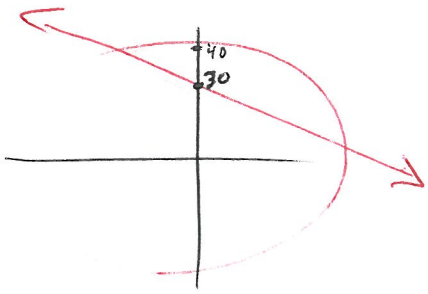
$-3y + 90 = x$

$x^2 + \left(-\frac{1}{3}x + 30\right)\left(-\frac{1}{3}x + 30\right) = 1620$

$x^2 + \frac{1}{9}x^2 - 10x - 10x + 900 = 1620$

$(-3y + 90)(-3y + 90) + y^2 = 1620$

$9y^2 - 270y - 270y + 8100 + y^2 = 1620$



$10y^2 - 540y + 6480 = 0$

$\frac{10}{} \quad = \frac{0}{10}$

$y^2 - 54y + 648 = 0$

$= \frac{-(-54) \pm \sqrt{(-54)^2 - 4(1)(648)}}{2}$

$= \frac{54 \pm 18}{2}$

$= +18$ and 36

$x = -3y + 90$

$x = -18$ to 36

51. 

$0.8t = 2.5t^2$

$2.5t^2 - 0.8t = 0$

t

$t(2.5t - 0.8) = 0$

$2.5t = 0.8$

(51) $t = .32$ min

55. $-2x^2 + 12x - 17 = 2x^2 - 16x + 31$

$+2x^2 - 12x + 17 = +2x^2 - 12x + 17$

$0 = 4x^2 - 28x + 48$

$\frac{0}{4} = \frac{4x^2 - 28x + 48}{4}$

$0 = x^2 - 7x + 12$

12

$-3 \quad -4$

-7

$0 = (x - 3)(x - 4)$

$x = 3$ and $x = 4$

(55) graphing, factoring

57. a. 

(57a) no solutions, 1, 2, 3, 4

57. b. 

(57b) no solution 1, 2, ∞