

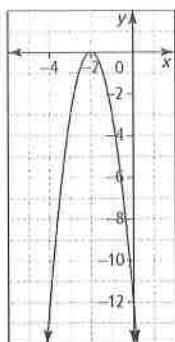
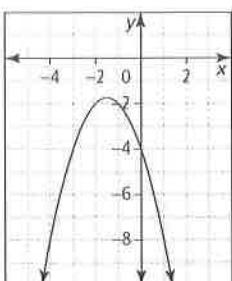
## Answers Section 4.1

1. a) 2 b) none c) 2 d) 1

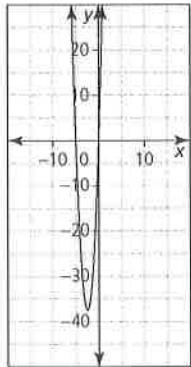
2. a)  $-3, 2$  b) no real roots c)  $-8.2, 1.2$  d) 3

3. a) no solution

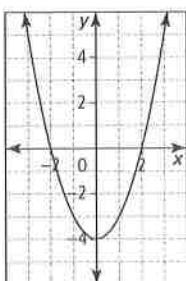
b)  $-2$



c)  $0, -5$



d)  $2, -2$



4. a)  $1.1, -3.5$  b)  $-3.9, 3.9$  c) no solution d)  $-2.8, 1.8$

5. Example: a)  $-10, 15$  b)  $-20, 20$  c)  $-0.7, 0.1$

d) no solution 6. a)  $m = 16$  b)  $m < 16$  c)  $m > 16$

7.  $4.5 \text{ s}$  8. 5 cm, 12 cm, 13 cm

## Section 4.2

1. a)  $(x+4)(x-5)$  b)  $3(x-3)(x-7)$  c)  $-4(x+1)(x+2)$

1d)  $\frac{1}{2}(x+3)(x-4)$  2. a)  $(2x-1)(7x+5)$  b)  $(x+5)(3x-4)$

2c)  $(4x+3y)(x+y)$  d)  $(2x-3)(3x-4)$  3. a)  $4(3x+2y)(x-y)$

3b)  $3y(2x+5)(x+2)$  c)  $10(7x-5y)(2x-5y)$  d)  $7x(3x+y)(2x+3y)$

4. a)  $(x-7y)(x+7y)$  b)  $(5x-3)(5x+3)$

4c)  $\left(x + \frac{5}{2}y\right)\left(x - \frac{5}{2}y\right)$  or  $\frac{1}{4}(2x+5y)(2x-5y)$

4d)  $16(x-3)$  5. a)  $(x+4)(x-8)$  b)  $(6x+7)(4x-3)$

5c)  $2(7x+4)(7x-3)$  d)  $(2x^2+3)(x^2-3)$

6. a)  $-3, 5$  b)  $4, -8$  c)  $3, 6$  d)  $\pm\sqrt{5}$

7. a)  $-\frac{1}{2}, \frac{4}{3}$  b)  $5, -\frac{1}{7}$  c)  $-\frac{1}{5}, 2$  d)  $\frac{3}{2}, -6$

8. a)  $\frac{13}{8}, -\frac{13}{8}$  b)  $\frac{7}{3}, -\frac{7}{3}$  c)  $\frac{1}{4}, -\frac{1}{4}$  d)  $8, -10$

9. a)  $-1, \frac{2}{3}$  b)  $\frac{1}{2}, 4$  c)  $-\frac{1}{3}, \frac{1}{2}$  d)  $6, -\frac{7}{2}$

10. a)  $-\frac{1}{3}$  b)  $\frac{3}{2}$  c)  $-\frac{5}{2}$  d)  $\frac{4}{7}$

## Section 4.3

1. a) 36 b) 100 c)  $\frac{49}{4}$  d)  $\frac{4}{25}$  2. a)  $(x+3)^2 = 5$  b)  $(x-4)^2 = 11$

2c)  $\left(x - \frac{5}{2}\right)^2 = \frac{67}{12}$  d)  $(x+5)^2 = 33$

3. a)  $-1, 9$  b)  $0, -1$  c)  $0.9, -0.7$  d)  $-7.5, -6.5$

4. a)  $-1 \pm \sqrt{3}$  b)  $\frac{5 \pm \sqrt{13}}{2}$  c)  $0.2, -0.8$  d)  $\frac{3}{7}$

5. a)  $\frac{3}{4}, -1$  b)  $-1 \pm \frac{2}{\sqrt{3}}$  c)  $-2 \pm 2\sqrt{6}$  d)  $1, 5$

6. a)  $-0.21, 4.71$  b)  $-0.26, 1.26$  c)  $-9.47, -0.53$  d)  $-0.88, 0.38$  7. 6, 16

## Section 4.4

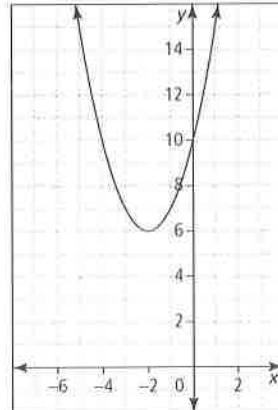
1. a) two real roots b) no real roots c) one real root d) no real roots 2. a) none b) 1 c) 2 d) 2

3. a)  $5 \pm \sqrt{2}$  b)  $\frac{7 \pm \sqrt{3}}{2}$  c)  $\frac{2}{3}$  d)  $0, \frac{3}{2}$

4. a)  $0.50, 0.33$  b) no solution c)  $-0.59, 2.26$  d)  $-4.46, 1.12$

5. a)  $-2 \pm \sqrt{5}$  b)  $\frac{1 \pm 2\sqrt{2}}{2}$  c)  $\frac{-5 \pm \sqrt{3}}{4}$  d)  $2 \pm \sqrt{7}$

6. a) No solution;



b)  $0, -7$ ; Factor method: can be factored quickly because  $x$  is a common factor

c)  $-\frac{5}{2}$ ; Factor method: a perfect square trinomial

d)  $-4 \pm \sqrt{3}$ ; Complete the square method: already in the form  $(x+a)^2 = b$

e)  $\frac{-1 \pm \sqrt{7}}{6}$ ; Quadratic formula: exact values are required for the answer

7. a)  $-3$  b)  $-\frac{1}{2}$