Practice 4.3

1. (a) $\dfrac{43}{10a}$ (b) $\dfrac{y + 6xz}{3xyz}$ (c) $\dfrac{3(5 - 2d)}{10cd}$

    (d) $\dfrac{2cd + 5}{2cd}$ (e) $\dfrac{2z - 3x}{36xyz}$ (f) $\dfrac{5a + 4b}{a^2b^2}$

2. (a) $\dfrac{2(11c + 5)}{(3c + 1)(5c + 3)}$ (b) $\dfrac{2(d - 13)}{(d + 1)(2d - 5)}$ (c) $\dfrac{7x}{4x + 2}$

    (d) $\dfrac{-5y}{6(1 + 3y)}$ (e) $\dfrac{9e - 2}{(e + 1)^2}$ (f) 0

3. (a) $\dfrac{3}{2 - a}$ (b) $\dfrac{15b}{3 - b}$

4. (a) $\dfrac{4x + 25}{(x + 5)^2}$ (b) $\dfrac{4 - x}{(x + 2)(x - 2)}$ (c) $\dfrac{-3x - 25}{(2x + 5)(2x - 5)}$

    (d) $\dfrac{8x + 15}{(x + 7)(x - 7)}$ (e) $\dfrac{9x - 23}{(x - 5)(x - 2)}$ (f) $\dfrac{1 - x}{(3x - 2)(x + 3)}$

    (g) $-\dfrac{6x + 4}{(2x + 1)(x - 5)}$ (h) $\dfrac{5x + 7}{3(x + 2)(x - 1)}$ (i) $-\dfrac{3x + 1}{2(3x - 5)(x - 1)}$

    (j) $\dfrac{(3x - 2)(2x - 1)}{x(x - 2)(x - 1)}$

5. (a) $\dfrac{-4a + 7b}{6c}$ (b) $\dfrac{-4x - 5}{(x + 1)(x - 1)}$ (c) 0

6. $\dfrac{xy}{y + x}$

7. $\dfrac{xy}{y - x}$

8. $-x^2$

9. $\dfrac{(y + x)^2}{x^2 + y^2}$

Practice 4.4

1. (a) $x = \dfrac{a - 4c}{b}$ (b) $x = \dfrac{h}{g} - 3k$ (c) $x = \dfrac{4m + n}{2}$

    (d) $x = \dfrac{2q}{p} + 1$ (e) $x = \dfrac{4m + 8}{l}$ (f) $x = \dfrac{g}{h} + 2$

2. (a) $x = \dfrac{y - c}{m}$ (b) $x = 2$

3. (a) $x = \dfrac{k - g}{2} + 4$ (b) $x = -2.75$

4. (a) $x = \dfrac{4 + 3s}{2s - 1}$ (b) $t = \dfrac{8w - 4y}{5y + 1}$

    (c) $n = \dfrac{3v}{2(t - u)}$ (d) $h = \dfrac{3v^2}{4(qv + 1)}$

    (e) $y = \dfrac{2b - a^2}{4}$ (f) $r = \dfrac{b + 16a^2b}{48a^2 - 1}$

    (g) $w = \pm\sqrt{2k - 5m}$ (h) $t = \pm\sqrt{L^2 + y^2}$

5. (a) $x = \dfrac{2h^2 + 45}{3(3 - h^2)}$ (b) $x = -\dfrac{77}{39}$

6. (a) $x = \dfrac{m}{m - n}$ (b) $x = \dfrac{8}{11}$

7. (a) $C = \dfrac{5}{9}(F - 32)$ (b) $32.2\,°C$ (c) $-40\,°C = -40\,°F$

8. (a) $h = \dfrac{2V}{t(a + b)}$ (b) $h = 9$

9. (a) $c = 12.50$ (b) $\$1090$

    (c) (i) $n = \dfrac{90}{x - c}$ (ii) 600 books

10. (a) $x = \pm\sqrt{2 + y^2}$ (b) $x = \dfrac{3}{2}y \pm 1$

11. (a) $z = \pm\sqrt{\dfrac{7y + 12}{2(1 + y)}}$ (b) $z = \pm 2$

12. (a) No   (b) $(3, 2)$, $(4, 3)$, $(6, 6)$

Pop Quiz 4

1. (a) $\dfrac{2(7x + 8)}{2x + 5}$ (b) $\dfrac{-19x - 4}{2(5 - x)}$

2. (a) $\dfrac{2}{x - 5}$ (b) $\dfrac{3x - 1}{2x + y}$

3. (a) $x = \dfrac{n + n^2}{n - 4}$ (b) $x = \pm\sqrt{y^2 + 3}$

4. (a) $n = \dfrac{T - D}{p}$ (b) 24 months/2 years

    (c) $\$22$

Progress Tracker 1 (Term)

1. (a) $x < 11$ (c) 7

2. (a) $\dfrac{5 - 11x}{(4x - 1)(2 - 5x)}$ (b) $\dfrac{-3x - 1}{(3x + 4)(x - 3)}$

3. (a) $2(1 - 5x)(1 + 5x)$ (b) $5(2a - 3b)(x + 3y)$

4. (b) $x = \dfrac{20}{7}$, $y = \dfrac{41}{7}$

5. (a) $\dfrac{3a^2}{4b^2}$ (b) $\dfrac{x - 2}{x - 3}$

6. (a) $x = \dfrac{zy}{z - y}$ (b) 10

7. (a) $85 - 4n$ (b) 21

8. (a) $\$3.50$ (b) $x = \dfrac{3000}{y - 2}$ (d) $\$15\,000$

9. (a) $m = -1\dfrac{1}{2}$

10. 4 or -4

11. (a) gradient $= -4$, y-intercept $= 4$ (b) $-3, 1, 5$

    (d) (i) $x = 0.5$, $y = 2$ (ii) 0.75 units^2

Chapter 5   Quadratic Functions, Graphs and Equations

Practice 5.1

1. (a) $10, 4, 0, -2, -2, 0, 4, 10$

    (c) (i) $x = 0.5$ (ii) -2 (iii) -1 and 2

2. (a) $-10, -4, 0, 2, 2, 0, -4, -10$

    (c) (i) $x = 2.5$ (ii) $(2.5, 2.25)$ (iii) $(1, 0)$, $(4, 0)$

3. (a) $a = -5.5$, $b = -5$

    (c) (i) $y = -4.4$ (ii) $x = 1.6$ or -3.6 (iii) $(-1, -5.5)$

4. (a) $a = -4$, $b = 8$

    (c) (i) $y = 8.25$ (ii) $x = 1$ or 4   (iii) $(2.5, 8.25)$

    (d) $x = 2.5$

5. (a) $a = 2.5$

    (c) (i) $16\,cm$ (ii) $3\,s$ (iii) $5.4\,s$ and $0.6\,s$

6. (a) $p = 75$, $q = 30$ (c) (i) $55\,m$ (ii) $5.9\,s$

    (d) $4\,s$

Practice 5.2

1. (a) $x = -2$ (b) $x = 4$

    (c) $x = 3$ or -4 (d) $x = 2$ or $1\dfrac{2}{3}$

    (e) $x = 0$ or -2.5 (f) $x = 3$ or 3.5

2. (a) $x = -3$ or -4 (b) $x = 7$ or -2

    (c) $x = 2$ or 8   (d) $x = -2$ or 10

    (e) $x = 4$ or 0.75 (f) $x = 1\dfrac{3}{4}$ or $\dfrac{2}{3}$

3. (a) $x = 3$ (b) $x = -2.5$

    (c) $x = 5$ or -5 (d) $x = 1\dfrac{1}{7}$ or $-1\dfrac{1}{7}$

4. (a) $x = \dfrac{1}{3}$ or -6 (b) $x = 9$ or -2.5

    (c) $x = -15$ or 0   (d) $x = 1.25$

5. (a) $x = 4.5$ or -1.5 (b) $x = -1$ or -2

    (c) $x = 2.6$ or -1 (d) $x = 11$ or -9

    (e) $x = -0.8$ or -5 (f) $x = 2$ or -2 or 0

6. (a) $k = -1$ (b) -2.5

7. (a) $p = -7$, $q = -1$ (b) $x = 0.5$ or 3

8. (a) $x = 0.8, -2$ (b) $y = 0$ or 2.8

9. (a) $k = 5$ (b) 535

10. (a) $a = -1.5$, $b = 4$, $c = -12$ (b) $x = 1.25$

11. (a) $c = 0$ (b) $b = 8$ (c) $(4, 16)$

12. (a) $x = \dfrac{2w}{3}$ (b) (i) $x = -1\dfrac{1}{3}$ (ii) $x = 1$

13. $\dfrac{2}{7}$

14. $13, 8, 7, -7, -8, -13$

Practice 5.3

1. $x = 14$ or -16

2. (a) $\dfrac{9x^2 + 27x}{2}$ (b) $CD = 10\,cm$

3. 5