

**Extra Practice 8**

Section

[4-1]

1. Solve.

a) $x^2 - 3 = 13$

c) $a^2 + 1 = 26$

e) $2y^2 - 7 = 65$

g) $3x^2 + 5 = 44$

i) $2x^2 - 14 = 0$

k) $2(a^2 - 5) = -28 + 4(a^2 + 3)$

b) $16x^2 - 9 = 0$

d) $3m^2 + 3 = 51$

f) $4y^2 - 49 = 0$

h) $25a^2 - 36 = 0$

j) $15(x^2 - 4) = 4(x^2 + 7)$

l) $7(2x^2 - 9) + 1 = 3(x^2 + 5)$

[4-2] 2. Solve graphically. Give the roots to one decimal place where necessary.

a) $x^2 - 16x + 40 = 0$

b) $x^2 + 7x + 5 = 0$

c) $x^2 + 4x - 20 = 0$

d) $y^2 + 6y = -4$

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

f) $m(3m + 1) = 3$

g) $x(x - 5) = 13$

h) $16 + 2a = a^2 - 5a$

i) $x^2 - 9x + 12 = 0$

[4-3] 3. Solve by factoring.

a) $a^2 - 8a + 15 = 0$

b) $3x^2 = 10x + 8$

c) $2a^2 + 15 = 13a$

d) $(a - 2)^2 = 49$

e) $2x^2 + 12x = -10$

f) $2 + 5x = 12x^2$

g) $x^2 - 13x + 49 = 19$

h) $x^2 + 2x + 1 = 81$

i) $4x^2 = (x + 1)^2$

[4-3] 4. Solve.

a) $2(a - 2)(a + 2) = 6a(a - 2) + 1$

b) $3(x - 1)^2 - 9 = (x - 4)(x + 1)$

c) $(m + 8)(m - 5) = (2m - 3)(2m + 1) - 43$

d) $(y - 1)(y - 2) + 3 = (2y - 1)^2$

e) $a(2a - 1) - 7 + (2a - 1)(a - 3) = (a + 2)(a + 3)$

[4-3] 5. Solve and check for extraneous roots.

a) $x = \sqrt{5x - 4}$

b) $x = \sqrt{10 - 3x}$

c) $x = \sqrt{-3x + 18}$

Extra Practice 9

Section

[4-4]

1. What constant term must be added to make each expression a perfect square?

a) $x^2 - 10x$

b) $x^2 + 4x$

c) $x^2 - 8x$

d) $x^2 - 7x$

e) $x^2 + 5x$

f) $x^2 + 11x$

g) $x^2 - x$

h) $x^2 - 4ax$

[4-4]

2. Solve by completing the square.

a) $x^2 - 6x - 14 = 0$

b) $x^2 + 8x + 13 = 0$

c) $x^2 + 22x + 22 = 0$

d) $x^2 + 14x - 16 = 0$

e) $x^2 - 2x - 5 = 0$

f) $x^2 - 4x - 11 = 0$

g) $2x^2 + 3x - 17 = 0$

h) $2x^2 - 9x - 15 = 0$

i) $3x^2 - 3x - 5 = 0$

[4-5]

3. Solve, using the quadratic formula.

a) $x^2 - 10x - 4 = 0$

b) $x^2 - 7x - 2 = 0$

c) $2x^2 + 7x - 2 = 0$

d) $3x^2 + 8x + 2 = 0$

e) $-2x^2 + 3x + 28 = 0$

f) $4x^2 - 13x + 2 = 0$

g) $5x^2 + 3x - 1 = 0$

h) $7x^2 - 7x + 1 = 0$

i) $-x^2 + 15x - 2 = 0$

[4-5]

4. Solve. Give the roots to two decimal places where necessary.

a) $2x^2 - 3x - 1 = 0$

b) $3x^2 + 4x - 1 = 0$

c) $3x^2 - 4x - 3 = 0$

d) $2x^2 - 5x - 12 = 0$

e) $4x^2 + 12x + 7 = 0$

f) $6x^2 + 11x - 10 = 0$

g) $x^2 + 12x = 8$

h) $x^2 + 20 = 18x$

i) $x^2 - 3x = 5$

[4-5]

5. Solve.

a) $\frac{2x}{x+3} = \frac{x}{x-2}$

b) $\frac{x^2}{x^2-9} = \frac{3x}{x+3}$

c) $\frac{3x-2}{x+4} = \frac{x+5}{x-3}$

d) $\frac{3x}{x+2} - \frac{2x-1}{x-3} = \frac{4x^2-7}{x^2-x-6}$

[4-6]

6. Find the value of the discriminant.

a) $x^2 + 4x - 12 = 0$

b) $x^2 - 16x + 50 = 0$

c) $x^2 + 18x + 20 = 0$

d) $2x^2 + 9x + 16 = 0$

e) $2x^2 - 10x + 3 = 0$

f) $3x^2 + 5x + 11 = 0$

[4-6]

7. Determine the nature of the roots of each equation.

a) $x^2 + 12x + 36 = 0$

b) $x^2 - 3x - 6 = 0$

c) $6x^2 + x - 2 = 0$

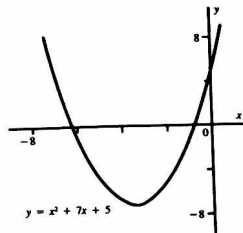
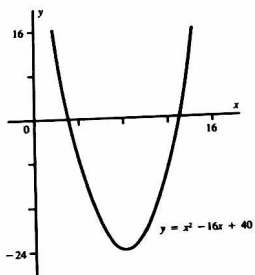
d) $x^2 + 3x + 5 = 0$

e) $4x^2 + 12x + 9 = 0$

f) $3x^2 + 11x - 4 = 0$

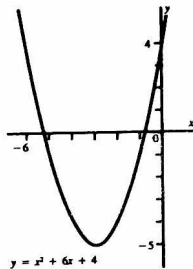
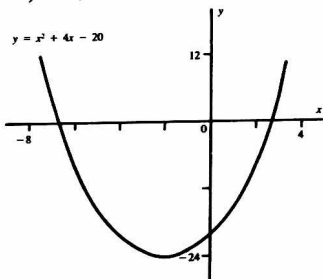
Extra Practice 8, page 8

1. a) ± 4 b) $\pm \frac{3}{4}$ c) ± 5 d) ± 4 e) ± 6 f) $\pm \frac{7}{2}$
 g) $\pm \sqrt{13}$ h) $\pm \frac{6}{5}$ i) $\pm \sqrt{7}$ j) $\pm 2\sqrt{2}$ k) $\pm \sqrt{3}$
 l) $\pm \sqrt{7}$
 2. a) 12.9, 3.1 b) -0.8, -6.2



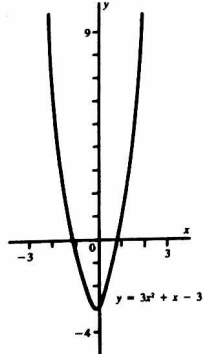
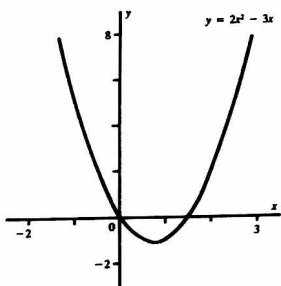
c) 2.9, -6.9

d) -0.8, -5.2

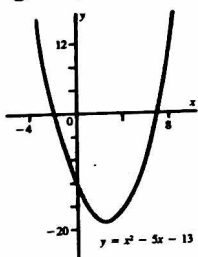


e) 0, 1.5

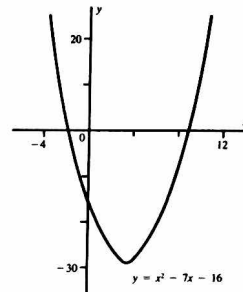
f) 0.8, -1.2



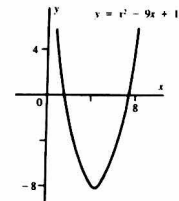
g) 6.9, -1.9



h) 8.8, -1.8



i) 7.4, 1.6



3. a) 3, 5 b) $-\frac{2}{3}, 4$ c) $\frac{3}{2}, 5$ d) -5, 9
 e) -1, -5 f) $-\frac{1}{4}, \frac{2}{3}$ g) 3, 10 h) -10, 8
 i) 1, $-\frac{1}{3}$
 4. a) $\frac{3}{2}$ b) $-\frac{1}{2}, 2$ c) $-\frac{2}{3}, 3$ d) $\frac{4}{3}, -1$ e) $-\frac{2}{3}, 5$
 5. a) 1, 4 b) 2 c) 3

Extra Practice 9, page 9

1. a) 25 b) 4 c) 16 d) $\frac{49}{4}$ e) $\frac{25}{4}$ f) $\frac{121}{4}$ g) $\frac{1}{4}$
 h) $4a^2$
 2. a) $3 \pm \sqrt{23}$ b) $-4 \pm \sqrt{3}$ c) $-11 \pm 3\sqrt{11}$
 d) $-\frac{7}{2} \pm \sqrt{65}$ e) $1 \pm \sqrt{6}$ f) $2 \pm \sqrt{15}$
 g) $\frac{-3 \pm \sqrt{145}}{4}$ h) $\frac{9 \pm \sqrt{201}}{4}$ i) $\frac{3 \pm \sqrt{69}}{6}$
 3. a) $5 \pm \sqrt{29}$ b) $\frac{7 \pm \sqrt{57}}{2}$ c) $\frac{-7 \pm \sqrt{65}}{4}$
 d) $\frac{-4 \pm \sqrt{10}}{3}$ e) $\frac{3 \pm \sqrt{233}}{4}$ f) $\frac{13 \pm \sqrt{137}}{8}$
 g) $\frac{-3 \pm \sqrt{29}}{10}$ h) $\frac{7 \pm \sqrt{21}}{14}$ i) $\frac{15 \pm \sqrt{217}}{2}$
 4. a) 1.78, -0.28 b) 0.22, -1.55 c) 1.87, -0.54
 d) 4, -1.5 e) -0.79, -2.21 f) 0.67, -2.5
 g) 0.63, -12.63 h) 16.81, 1.19 i) 4.19, -1.19
 5. a) 0, 7 b) 0, 4.5 c) $5 \pm 4\sqrt{2}$ d) $-2 \pm \sqrt{7}$
 6. a) 64 b) 56 c) 244 d) -47 e) 76 f) -107
 7. a) 1 real b) 2 real c) 2 real d) 0 real e) 1 real
 f) 2 real

Extra Practice 10, page 10

1. a) D,R:all real numbers b) $x \geq 2; y \geq 0$
 c) $x \geq 0; y \geq 0$ d) D:all real numbers; $y \geq 0$
 e) D,R:all real numbers f) $x \neq 0; y \neq 0$
 2. a) Yes b) No c) Yes d) Yes e) No f) Yes
 g) Yes h) No i) No
 3. a) 14 b) $\frac{11}{4}$ c) $\frac{7}{3}$ d) 2.48 e) 2
 4. a) 6 b) 10 c) 0 d) 45 e) $\frac{15}{8}$