

Chapter 3 Review

3.1 Complete the Square, pages 124–134

1. Write each quadratic function in vertex form,

$$y = a(x - h)^2 + k.$$

a) $y = \frac{1}{5}x^2 + 2x + 8$

b) $y = -x^2 + 4x - 13$

c) $y = -(2x - 1)(4x + 5)$

2. Find the maximum or minimum of each quadratic function.

a) $-8y = (4x - 3)(x + 2)$

b) $y = 5x^2 - 3x + 1$

c) $y = x^2 + \frac{1}{2}x + \frac{9}{4}$

3.2 The Quadratic Formula, pages 135–144

3. Solve for
- x
- using the quadratic formula.

Round decimal answers to the nearest hundredth.

a) $-2.4x^2 + 3.6x + 4 = 0$

b) $0.2 + \frac{8}{5}x^2 = \frac{11}{5}x$

c) $-15 + 3x^2 - 3x = 0$

4. Solve for
- x
- using the quadratic formula.

Express your answers as exact roots.

a) $x^2 - \frac{5}{4} = x$

b) $2x = \frac{21}{4} - x^2$

3.3 Real Roots of Quadratic Equations, pages 145–152

5. Use the discriminant to determine the number of real roots for each equation.

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

b) $-x^2 + 7x - 4 = 8x$

c) $-3x^2 = -9x + 32$

d) $8 = 6x^2 - 7x$

e) $-4x - 4 = x^2$

f) $13x^2 = -5x - 2$

6. Determine the
- x
- intercepts of each quadratic function. Round answers to the nearest hundredth, if necessary.

a) $y = -6x^2 + 15x + 9$

b) $y = 8x^2 - 12x + 4$

c) $y = -3x^2 + 14x - 12$

d) $y = 6x^2 + 7x - 2$

3.4 Multiple Forms of Quadratic Functions, pages 153–163

7. Find the
- x
- intercepts, the
- y
- intercept, the coordinates of the vertex, and the equation of the axis of symmetry for each function.

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

b) $y = -2x^2 - 3x - 1$

c) $y = 2.4x^2 - 4x + \frac{9}{7}$

d) $y = -\frac{5}{8}x^2 - \frac{15}{4}x - \frac{25}{8}$

8. Indicate the intervals on which the function

$$y = \frac{1}{2}x^2 + \frac{3}{2}x - 2$$
 is positive or negative, and

increasing or decreasing. If necessary, sketch the graph to help visualize the function.

3.5 Model With Quadratic Equations, pages 164–173

9. a) Make a scatter plot of the data in the table.

x	y
0	5.1
0.3	3.4
0.4	3.2
0.6	2.4
0.9	2.0
1.1	2.0
1.5	2.7
1.8	4.0
2.0	4.9
2.3	7.2

- b) Estimate the coordinates of the vertex.
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- c) Write an equation that approximately models the data.