

**Simplifying Radicals**

Simplify each radical. (This DOES NOT mean write it as a decimal!)

1.  $\sqrt{48}$

2.  $\sqrt{-540}$

3.  $\sqrt{-27}$

**Quadratic Formula**

Solve each equation using the quadratic formula.

4.  $k^2 - 7k + 12 = 0$

5.  $10x^2 - 9 = 9x$

6.  $3z^2 + 2z + 3 = 4$

7.  $5x^2 + 3x - 1 = 0$

8.  $b^2 - 10b = 20$

9.  $3x^2 = 6 - 2x$

10.  $2x^2 + 4x = -3$

11.  $2h^2 - 7h = -7$

12.  $4g^2 + 3 = 6g$

13.  $x^2 + 2x + 2 = 0$

### **Vertex Formula**

Determine the vertex of each quadratic function.

14.  $y = x^2 - 6x + 4$

15.  $y = 2x^2 - 8x + 3$

16.  $y = -3x^2 + 24x - 2$

### **Applications of Quadratics**

17. Cole kicked a football. The equation  $h = -16t^2 + 60t + 25$  describes the height of the ball  $t$  seconds after it was kicked. How long did it take the football to hit the ground?

18. The height of an arrow that has been shot skyward is modeled by  $h = -2t^2 + 20t - 2$ , where  $t$  is the number of seconds after the arrow was shot. What is the highest height that the arrow reaches?

19. The cost of a pizza with “the works” is given as a function of its diameter. The relationship is  $C = d^2 - 2d + 447$ , where  $C$  is the cost in cents, and  $d$  is the diameter of the pizza in centimeters. If the pizza costs \$16.00, then what is the diameter of the pizza?

20. A watermelon is launched in the air at a picnic. The height of the watermelon  $t$  seconds after it is launched is modeled by  $h = -4t^2 + 50t - 9$ . When does the watermelon reach its maximum height?