Name

Class

Date

Standard Form of a Quadratic Function

**Identify the vertex, the axis of symmetry, the maximum or minimum value, and the range of each parabola.**

**1.** *y =* *x*2 − 4*x +* 1 **2.** *y =* −*x*2 + 2*x +* 3

**3.** *y =* −*x*2 − 6*x −* 10 **4.** *y =* 3*x*2 + 18*x +* 32

**5.** *y =* 2*x*2 + 3*x −* 5 **6.** *y =* −3*x*2 + 4*x*

**Graph each function.**

 **7.** *y* = *x*2 + 2*x −* 5 **8.** *y =* −*x*2 + 3*x +* 1

 **9.** *y =* 3*x*2 − 8*x* **10.** *y =* 2*x*2 + 4*x* − 4

**Write each function in vertex form.**

**11.** *y =* *x*2 − 8*x +* 19 **12.** *y =* *x*2 − 2*x −* 6

**13.** *y =* 2*x*2 − 12*x +* 11 **14.** *y =* −2*x*2 − 4*x +* 6

**15.** A small independent motion picture company determines the profit *P* for producing *n* DVD copies of a recent release is *P =* −0.02*n*2 + 3.40*n −* 16. *P* is the profit in thousands of dollars and *n* is in thousands of units.

**a.** How many DVDs should the company produce to maximize the profit?

**b.** What will the maximize profit be?

**Sketch each parabola using the given information.**

**16.** vertex (4, −2), *y*–intercept 6 **17.** vertex (−3, 12), point (−1, 0)

**18.** A local nursery sells a large number of ornamental trees every year. The owners have determined the cost per tree *C* for buying and caring for each tree before it is sold is *C* = 0.001*n*2 − 0.3*n +* 50. In this function, *C* is the cost per tree in dollars and *n* is the number of trees in stock.

**a.** How many trees will minimize the cost per tree?

**b.** What will the minimum cost per tree be?

**For each function, find the *y*-intercept.**

**19.** *y =* (*x +* 3)2 − 5 **20.** *y =* −2(*x −* 2)2 + 6

**21.** *y =* −(*x +* 1)2 + 9 **22. **