Name _____ Date _____

CHAPTER 10

Chapter Test C

For use after Chapter 10

Tell how you can obtain the graph of *g* from the graph of *f* using transformations.

1. $f(x) = -x^2 - 2$

$g(x) = x^2 + 5$

2. $f(x) = \frac{1}{2}x^2 + 3$

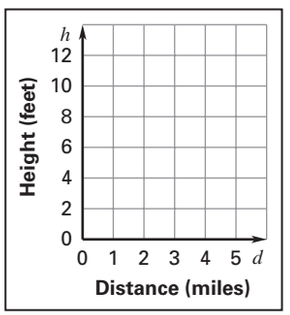
$g(x) = 4x^2 + 1$

In Exercises 3 and 4, use the following information.

The distance a lookout in a submarine can see is related to how high the periscope is above the surface of the water. The height (in feet) of the periscope can be modeled by the function $h = 0.51d^2$ where d is the distance (in miles) the lookout can see.

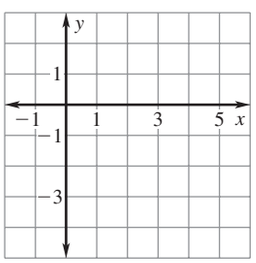
3. Graph the function.

4. Use the graph to estimate how many feet above the surface of the water the periscope must be in order to see a ship 4 miles away.

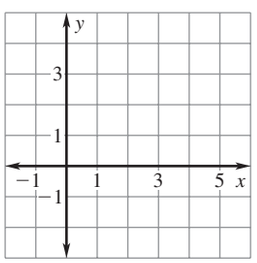


Graph the function. Label the vertex and the axis of symmetry.

5. $y = -\frac{1}{4}x^2 + x - 1$



6. $y = \frac{3}{2}x^2 - 4x + 2$



In Exercises 7–10, use the following information.

In the past, a concert promoter sold 8000 tickets when the tickets were priced at $10 each. He wants to increase the price of a ticket, but he estimates he will lose 500 ticket sales for each $1 increase in the price of a ticket.

7. Write a function for the revenue R generated by selling tickets in terms of the number n of $1 increases.

8. Write the function in Exercise 7 in standard form.

9. Find the maximum revenue.

10. At what price should the tickets be sold to generate the most revenue?

Answers

1. _____

_____

_____

2. _____

_____

_____

3. See left.

4. _____

5. See left.

6. See left.

7. _____

8. _____

9. _____

10. _____

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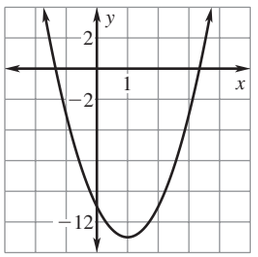
CHAPTER 10

Chapter Test C *continued*

For use after Chapter 10

11. Approximate the zeros of the function $f(x) = 2x^2 - 4x - 9$ to the nearest tenth.



12. The net annual income I (in dollars) of a family physician between the ages of 27 and 70 can be modeled by the equation $I = -290(x - 48)^2 + 148{,}000$ where x is the age (in years) of the physician. Find the age(s) of the physicians with an income of $100,000 per year.

Solve the equation by completing the square. Round the solutions to the nearest hundredth.

13. $v^2 = 14 + 16v$

14. $2w^2 - 4w - 1 = 0$

Use the quadratic formula to solve the equation. Round the solutions to the nearest hundredth.

15. $6q^2 + 4q = 5q - 2$

16. $4d + 2 = (d - 1)(d + 3)$

In Exercises 17 and 18, use the following information.

The fuel efficiency E (in miles per gallon) for a mid-sized car can be modeled by the equation $E = -0.018v^2 + 1.476v + 3.4$ where v is the speed (in miles per hour) of the car.

17. At what speed should the car travel on the highway to get 30 miles per gallon?

18. Does the mid-sized car ever get 35 miles per gallon? If so, at what speed(s)?

19. Give a value of c for which the equation $5x^2 + 10x + c = 0$ has (a) two solutions, (b) one solution, and (c) no solutions.

Tell whether the table of values represents a *linear function*, an *exponential function*, or a *quadratic function*. Then write an equation for the function.

20.

x	−2	–1	0	1	2
y	2	2.5	3	3.5	4

21.

x	−2	–1	0	1	2
y	3	−3	−5	–3	3

Answers

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

_____

_____

20. _____

_____

21. _____

_____