12. Using the curve from Exercise 10, predict y when $x = 10$.

13. Using the curve from Exercise 11, predict y when $x = 12$.

For Exercises 14–18, use the data (0, 115.00), (1, 48.33), (2, 26.11), (6, 15.14), (7, 15.05), and (8, 15.02).

14. Make a scatter plot for the data.

15. What seems to be the equation of the horizontal asymptote?

16. Write $\log(y - 15)$ as a function of x.

17. Write y as a function of x.

18. Use your answer to Exercise 16 to predict y when x is 1.5.

Explain how to test a set of data for a fit by the given type of curve.

19. exponential curve

20. power curve

MIXED REVIEW

Chapters 1–18

Give the domain, range, and zeros of each function.

1. $f(x) = \sqrt{9 - x^2}$

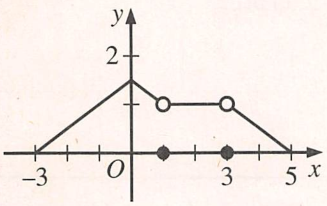
2. $g(t) = |t + 5|$

3. $f(x) = \dfrac{3x}{x^2 - 25}$

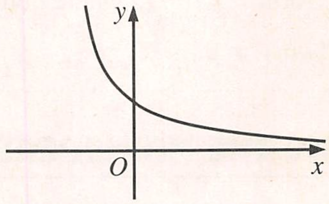
4. $h(t) = \dfrac{1}{t^2 - 10t + 25}$

Tell whether each graph is a function. If it is, give the domain and range.

5.



6.



Find the limit, if one exists, of these infinite sequences.

7. $\lim\limits_{n \to \infty} \dfrac{n^2 - 6n + 1}{3n^2 + 5n - 4}$

8. $\lim\limits_{n \to \infty} e^{1/n}$

9. $\lim\limits_{n \to \infty} \sqrt[n]{\pi}$

For each infinite geometric series, find (a) the interval of convergence and (b) the sum expressed in terms of x.

10. $1 - x^2 + x^4 - x^6 + \ldots$

11. $1 + \dfrac{3}{x} + \dfrac{9}{x^2} + \dfrac{27}{x^3} + \ldots$

For Exercises 12–16, use the vectors u = (3, 0, –1) and v = (1, 1, 0).

12. Find **u** • **v**.

13. Find **u** × **v**.

14. Find the angle between **u** and **v**.

15. Find a unit vector perpendicular to both **u** and **v**.

16. Find the area of a triangle having **u** and **v** as two of its sides.

17. Find the first five terms of the sequence defined recursively by $t_1 = 2$ and $t_n = \frac{1}{2}t_{n-1}{}^2 - 1$.

18. Repeat Exercise 20 using $t_1 = 4$.