6.1 EXERCISES

15–20 ■ Match the exponential function with one of the graphs labeled I–VI.

15. $f(x) = 5^x$

16. $f(x) = -5^x$

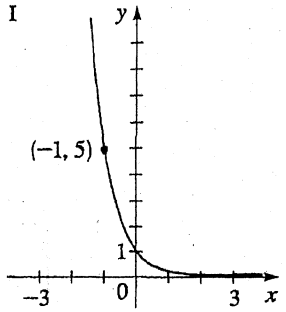
17. $f(x) = 5^{-x}$

18. $f(x) = 5^x + 3$

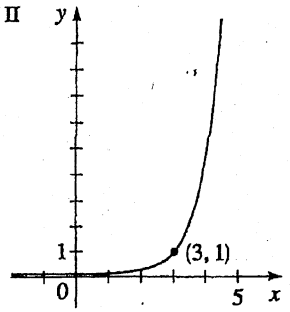
19. $f(x) = 5^{x-3}$

20. $f(x) = 5^{x+1} - 4$

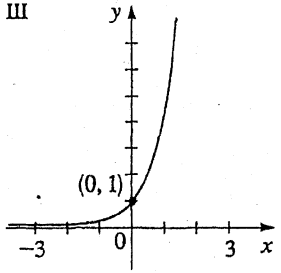
I



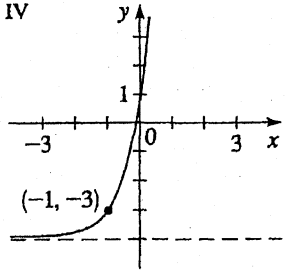
II



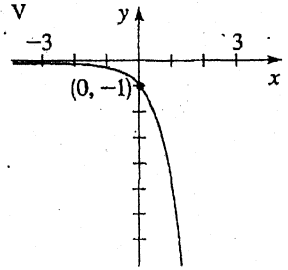
III



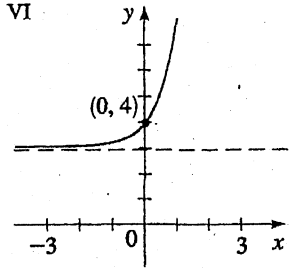
IV



V



VI



21–36 ■ Graph the function, not by plotting points, but by starting from the graphs in Figure 4. State the domain, range and asymptote.

21. $f(x) = -3^x$

22. $f(x) = 10^{-x}$

23. $g(x) = 2^x - 3$

24. $g(x) = 2^{x-3}$

25. $h(x) = 4 + \left(\frac{1}{2}\right)^x$

26. $h(x) = 6 - 3^x$

27. $f(x) = 10^{x+3}$

28. $f(x) = -\left(\frac{1}{5}\right)^x$

29. $f(x) = -3^{-x}$

30. $f(x) = 10^{-x} - 4$

31. $y = 5^{-2x}$

32. $y = 1 + 2^{x+1}$

33. $f(x) = 5 - 2^{x-1}$

34. $f(x) = 1 - 2^{-x}$

DISCOVERY • DISCUSSION

53. Growth of an Exponential Function Suppose you are offered a job that lasts one month, and you are to be very well paid. Which of the following methods of payment is more profitable for you?

(a) One million dollars at the end of the month

(b) Two cents on the first day of the month, 4 cents on the second day, 8 cents on the third day, and, in general, 2^n cents on the nth day

54. The Height of the Graph of an Exponential Function Your mathematics instructor asks you to sketch a graph of the exponential function

$$f(x) = 2^x$$

for x between 0 and 40, using a scale of 10 units to one inch. What are the dimensions of the sheet of paper you will need to sketch this graph?

6.2 EXERCISES

3–8 ■ Graph the function, not by plotting points, but by starting from the graph of $y = e^x$ in Figure 1. State the domain, range, and asymptote.

3. $y = -e^x$

4. $y = 1 - e^x$

5. $y = e^{-x} - 1$

6. $y = -e^{-x}$

7. $y = e^{x-2}$

8. $y = e^{x-3} + 4$