Name:_____

4.5 Exponential and Log Graphs

19–24 ■ Match the exponential function with one of the graphs labeled I–VI.

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

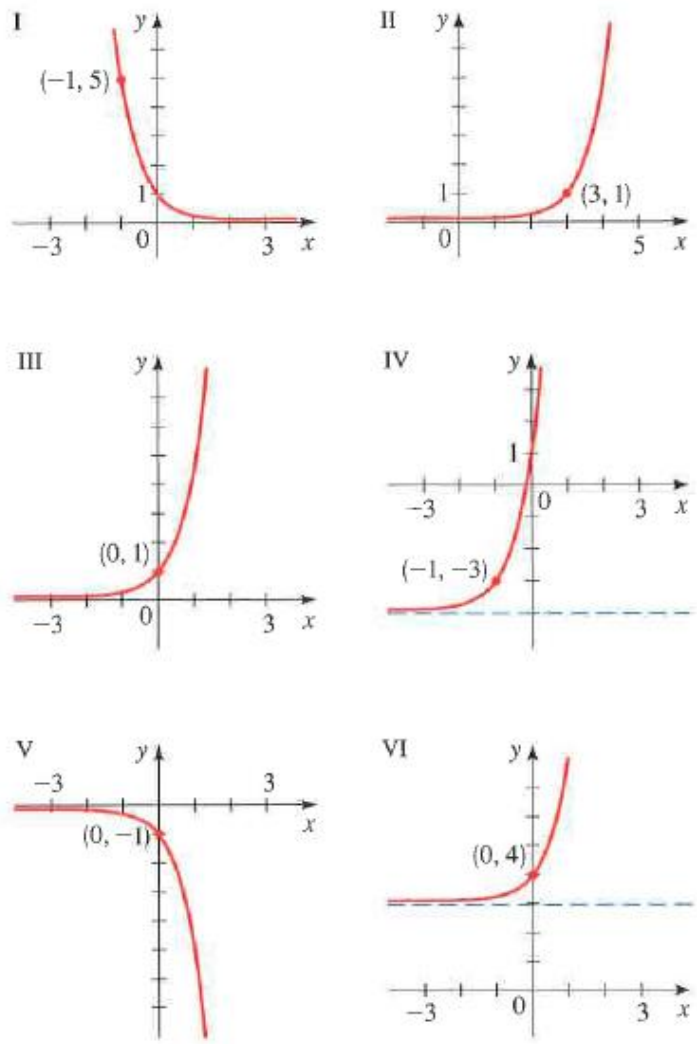
20. $f(x) = -5^x$

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

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

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

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



25–38 ■ Graph the function, not by plotting points, but by starting from the graphs in Figures 2 and 5. State the domain, range, and asymptote.

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

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

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

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

33. $f(x) = -e^x$

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

37. $f(x) = e^{x-2}$

41–46 ■ Match the logarithmic function with one of the graphs labeled I–VI.

41. $f(x) = -\ln x$

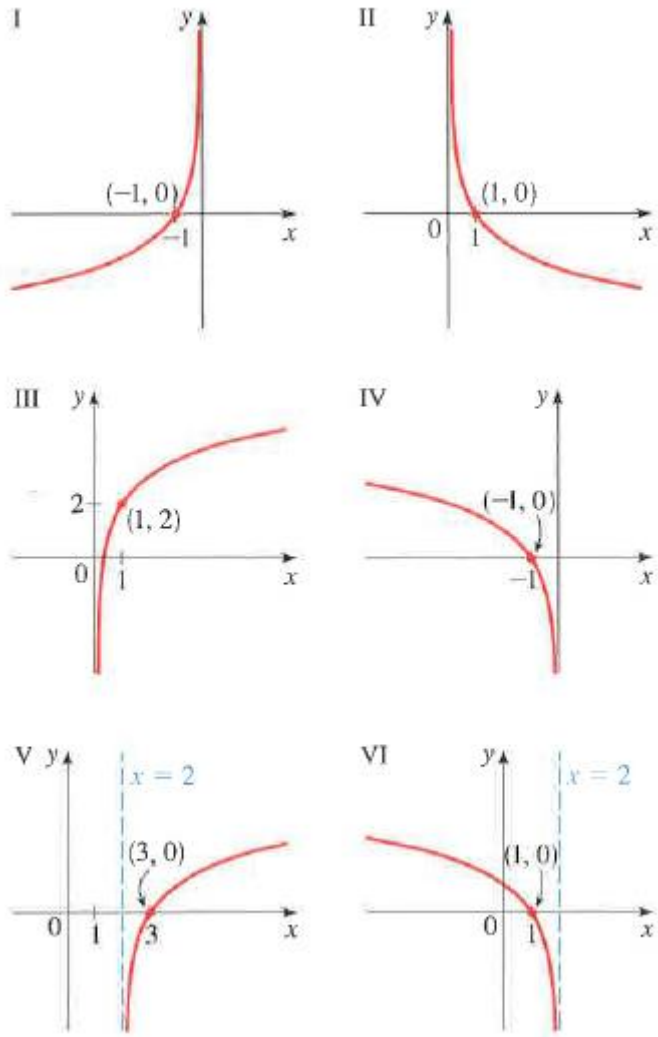
42. $f(x) = \ln(x - 2)$

43. $f(x) = 2 + \ln x$

44. $f(x) = \ln(-x)$

45. $f(x) = \ln(2 - x)$

46. $f(x) = -\ln(-x)$



59–64 ■ Find the domain of the function.

59. $f(x) = \log_{10}(x + 3)$

60. $f(x) = \log_5(8 - 2x)$

61. $g(x) = \log_3(x^2 - 1)$

62. $g(x) = \ln(x - x^2)$