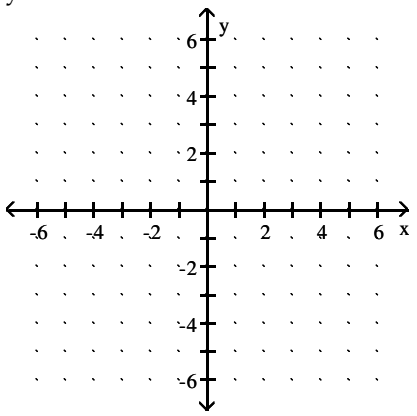
Chapter 9–10 Review

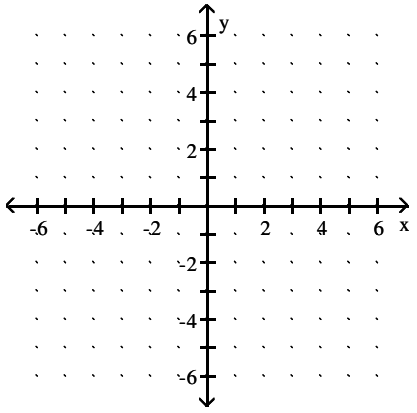
Sections labeled at the start of the related problems

9.2 Graph.

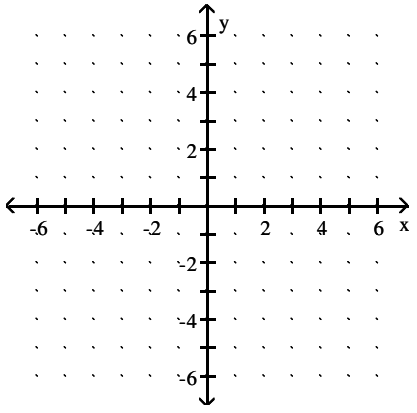
1) $y = 5^x$



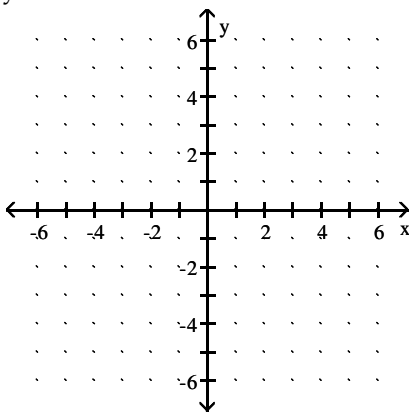
2) $y = \left(\frac{1}{4}\right)^x$



3) $y = 5^{(x + 3)} - 1$



4) $y = 4^{-x}$



Solve the problem.

5) A computer is purchased for $3400. Its value each year is about 76% of the value the preceding year. Its value, in dollars, after t years is given by the exponential function

$$V(t) = 3400(0.76)^t$$

Find the value of the computer after 3 years.

9.6 Solve. Where appropriate, include approximations to the nearest thousandth. If no solution exists, state this.

6) $4^x = 256$

7) $3^x = \frac{1}{27}$

8) $2^{(2x + 1)} = 8$

9.3 Simplify.

9) $\log_2 \frac{1}{2}$

10) $\log_8 32$

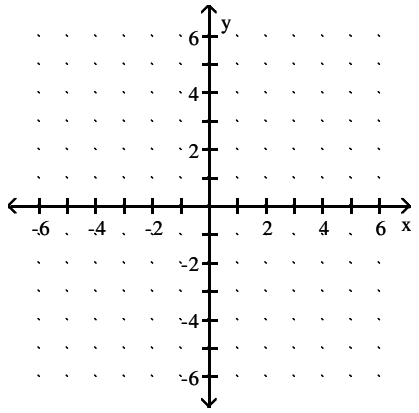
11) $\log_{10} 10$

12) $\log_9 9^3$

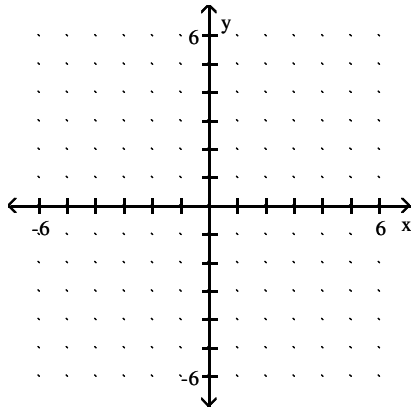
13) $9^{\log_9(6)}$

Graph.

14) $y = \log_2 x$



15) $y = \log_3 (x - 1)$



Rewrite as an equivalent exponential equation. Do not solve.

16) $t = \log_7 49$

17) $\log_5 1 = 0$

18) $\log_w Q = 10$

Rewrite as an equivalent logarithmic equation. Do not solve.

19) $2^3 = 8$

20) $5^{-3} = \frac{1}{125}$

21) $16^{1/4} = 2$

22) $y^z = 9$

Solve the problem.

23) $\log_3 x = 4$

24) $\log_x 4 = 1$

25) $\log_x 125 = 3$

9.5 Use a calculator to find an approximation to the nearest ten–thousandth.

26) $\log 2.67$

27) $10^{-1.08872}$

28) $\ln 74$

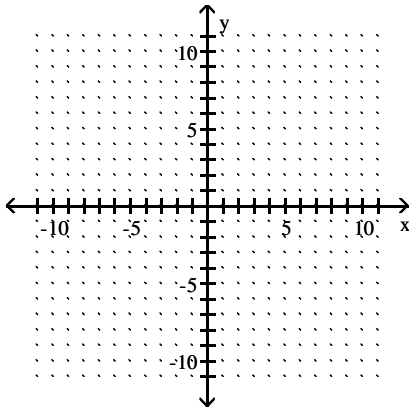
29) $e^{-1.9}$

Find the logarithm using the change–of–base formula. Round to the nearest ten–thousandth.

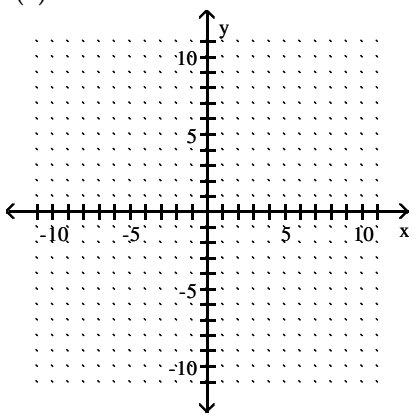
30) $\log_6 71.97$

Graph and state the domain and the range of the function.

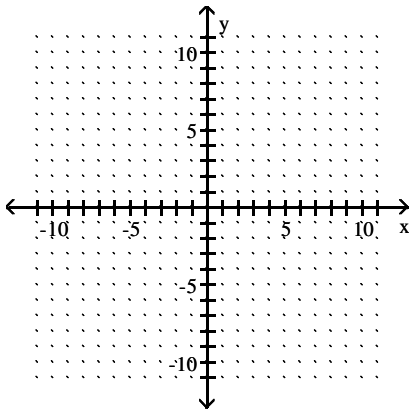
31) $f(x) = e^x - 3$



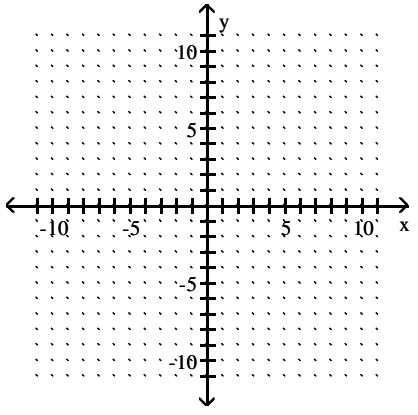
32) $f(x) = e^{-x} + 3$



33) $g(x) = \ln x + 2$



34) $g(x) = \ln(x - 5)$



10.1 Find an equation of the circle satisfying the given conditions.

35) Center at (0, 0), radius 11

36) Center at (−7, 1), radius 4

37) Center at (−5, −7), radius $\sqrt{11}$

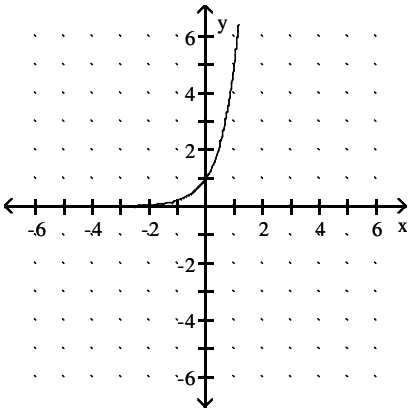
Find the center and the radius of the circle.

38) $x^2 + y^2 = 16$

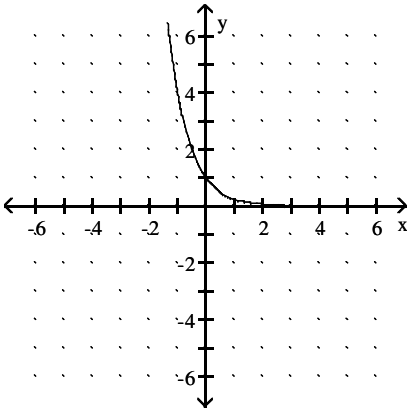
39) $(x - 2)^2 + (y + 8)^2 = 6$

40) $x^2 + y^2 - 10x - 16y + 80 = 0$

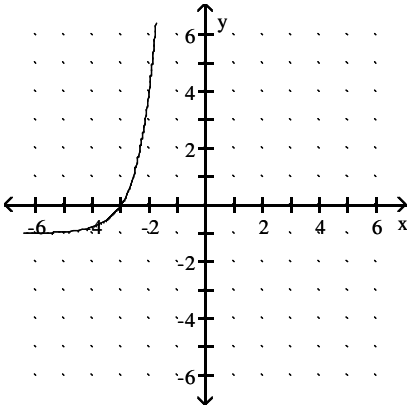
1)



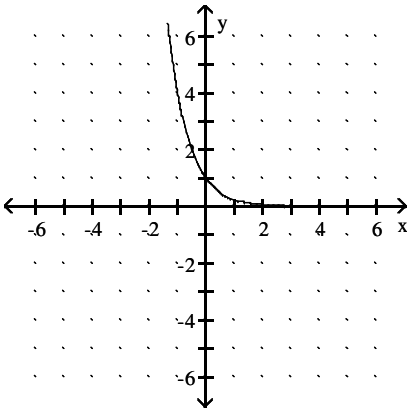
2)



3)



4)



5) $1492.52

6) 4

7) −3

8) 1

9) −1

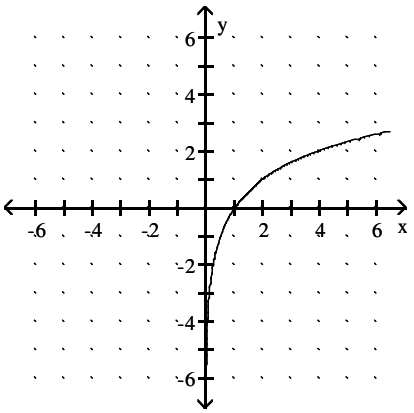
10) $\frac{5}{3}$

11) 1

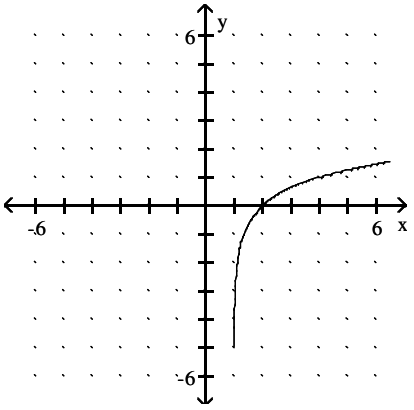
12) 3

13) 6

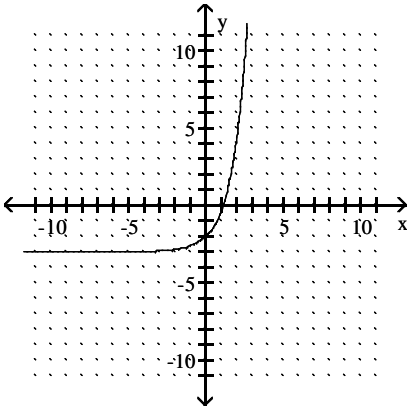
14)



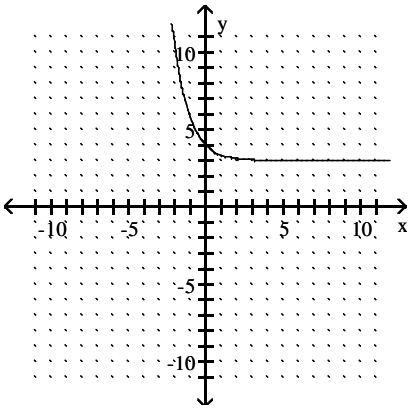
15)



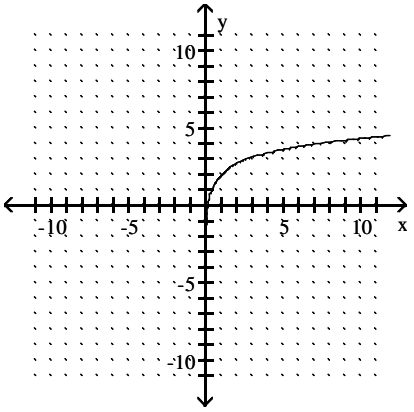
16) $7^t = 49$
17) $5^0 = 1$
18) $w^{10} = Q$
19) $3 = \log_2 8$
20) $-3 = \log_5 \frac{1}{125}$
21) $\frac{1}{4} = \log_{16} 2$
22) $z = \log_y 9$
23) 81
24) 4
25) 5
26) 0.4265
27) 0.0815
28) 4.3041
29) 0.1496
30) 2.3866
31) Domain: $\mathcal{R}$
Range: $(-3, \infty)$



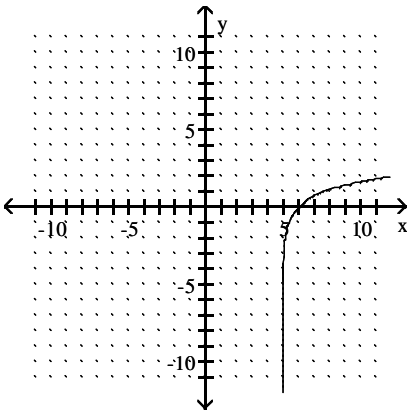
32) Domain: $\mathcal{R}$
Range: $(3, \infty)$



33) Domain: (0, ∞)
Range: $\mathcal{R}$



34) Domain: (5, ∞)
Range: $\mathcal{R}$



35) $x^2 + y^2 = 121$

36) $(x + 7)^2 + (y - 1)^2 = 16$

37) $(x + 5)^2 + (y + 7)^2 = 11$

38) (0, 0), r = 4

39) (2, −8), $r = \sqrt{6}$

40) (5, 8); r = 3