Section 3.2 - Logarithmic Functions and Their Graphs

1. Write the logarithmic equation in exponential form.

$\log_4 16 = 2$

a. $16^4 = 2$

b. $4^{1/2} = 16$

c. $4 \cdot 2 = 16$

d. $4^2 = 16$

e. $4^{16} = 2$

3. Write the logarithmic equation in exponential form.

$\log_3 \frac{1}{9} = -2$

a. $3^{-1/2} = 9$

b. $3^{-2} = \frac{1}{9}$

c. $3^{1/2} = -9$

d. $-2 \cdot 3 = \frac{1}{9}$

e. $9^{-2} = \frac{1}{3}$

6. Write the logarithmic equation in exponential form.

$\log_9 3 = \frac{1}{2}$

a. $(1/2)^9 = 3$

b. $9^{1/2} = 3$

c. $3^{1/2} = 9$

d. $9 \cdot \frac{1}{2} = 3$

e. $9^{-1/2} = \frac{1}{3}$

7. Write the exponential equation in logarithmic form.

$2^3 = 8$

a. $\log_8 2 = 3$
b. $\log_2 8 = 3$
c. $\log_8 2 = -3$
d. $\log_2 3 = 8$
e. $\log_2 8 = \frac{1}{3}$

ANSWER:	b
POINTS:	1
REFERENCES:	5.2.15
QUESTION TYPE:	Multi-Mode (Multiple choice)
HAS VARIABLES:	True
STUDENT ENTRY MODE:	Basic
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8. Write the exponential equation in logarithmic form.

$24^2 = 576$

a. $\log_{24} 576 = 2$
b. $\log_{24} 576 = \frac{1}{2}$
c. $\log_{576} 24 = 2$
d. $\log_{24} 576 = -2$
e. $\log_{24} 2 = 576$

9. Write the exponential equation in logarithmic form.

$81^{1/2} = 9$

a. $\log_{81} 9 = \frac{1}{2}$

b. $\log_{81} \frac{1}{2} = 9$

c. $\log_{81} 9 = 2$

d. $\log_{81} 9 = -\frac{1}{2}$

e. $\log_9 81 = \frac{1}{2}$

11. Write the exponential equation in logarithmic form.

$28^0 = 1$

a. $\log_{28} 1 = 28$
b. $\log_{28} 0 = 1$
c. $\log_1 28 = 28$
d. $\log_1 28 = 0$
e. $\log_{28} 1 = 0$

13. Evaluate $f(x) = \log x$ at the indicated value of *x*. Round your result to three decimal places if necessary.

$x = \frac{3}{2}$

a. 5.682
b. 1.5
c. –0.176
d. –5.682
e. 0.176

14. Evaluate $f(x) = \log x$ at the indicated value of *x*. Round your result to three decimal places.

$x = \frac{1}{100}$

a. –0.5
b. 0.01
c. 0.5
d. –2

e. 2

17. Evaluate the function at the indicated value of $x = 64$.

$f(x) = \log_8 x$

a. 0
b. $-\frac{1}{2}$
c. $\frac{1}{2}$
d. –2
e. 2

21. Evaluate the function at the indicated value of $x = b^{-7}$.

$g(x) = \log_b x$

a. 7
b. 0
c. $\frac{1}{7}$
d. –7
e. $-\frac{1}{7}$

23. Use the properties of logarithms to simplify the expression.

$9^{\log_9 17}$

a. 17
b. 0

c. $-\frac{1}{17}$

d. –17

e. $\frac{1}{17}$

24. Write the logarithmic equation in exponential form.

$\ln\left(\frac{1}{3}\right) = -1.099\ldots$

a. $e^{1.099\ldots} = -\frac{1}{3}$

b. $e^{1.099\ldots} = \frac{1}{3}$

c. $(1/3)^e = -1.099\ldots$

d. $e^{-1.099\ldots} = \frac{1}{3}$

e. $e^{-1/3} = -1.099\ldots$

30. Write the exponential equation in logarithmic form.

$e^{2x} = 3$

a. $\ln 3 = -2x$

b. $\log_3 2x = e$

c. $\ln 2x = 3$

d. $\ln 3 = 2x$

e. $\ln 2 = 3x$

33. Evaluate the function at the indicated value of $x = \frac{1}{4}$. Round your result to three decimal places if necessary.

$g(x) = -\ln x$

a. –1.386

b. 4

c. 2.079
d. –2.079
e. 1.386

34. Evaluate $g(x) = \ln x$ at the indicated value of x.

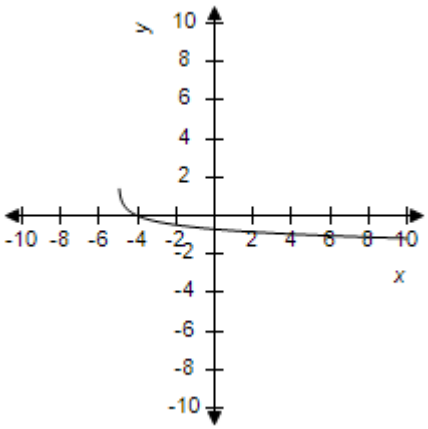
$x = e^7$

a. $-\frac{1}{7}$
b. e^7
c. –7
d. 7
e. $\frac{1}{7}$

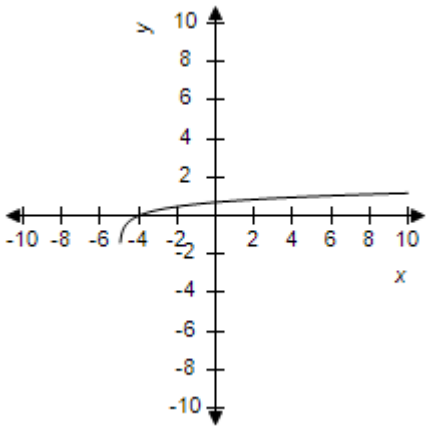
36. Select the graph of the function.

$f(x) = \log(x + 5)$

a.



b.



c.

d.

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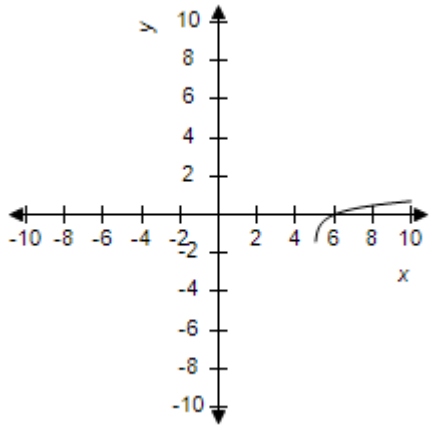
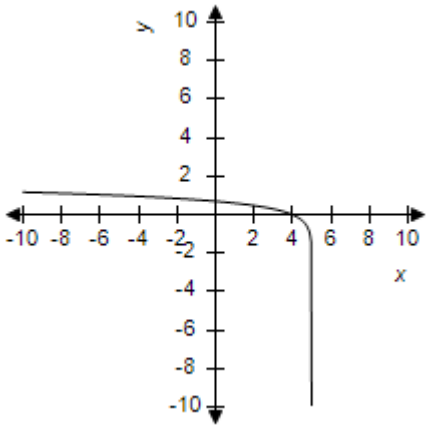
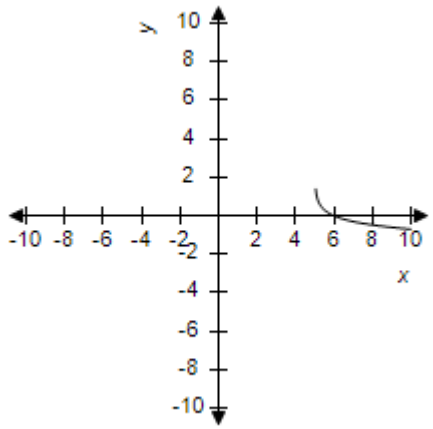




e.



38. Use the One-to-One Property to solve the equation for *x*.

$\log_7(x+5)=\log_7 15$

a. 13
b. 11
c. 12
d. 10
e. 14

41. Rewrite the logarithmic equation $\log_4 \frac{1}{16}=-2$ in exponential form.

a. $4^{-2}=-\frac{1}{16}$

b. $4^{16}=-2$

c. $4^{-2} = \frac{1}{16}$

d. $4^{1/16} = -2$

e. $\left[\frac{1}{16}\right]^{-2} = 4$

44. Identify the value of the function $f(x) = \log x$ at $x = 915$. Round to 3 decimal places.

a. 6.819

b. 3.961

c. 2.961

d. 4.461

e. 3.461

45. Write the logarithmic equation $\ln 4 = 1.386\ldots$ in exponential form.

a. $e^{1.386\ldots} = 4$

b. $e^4 = 1.386\ldots$

c. $2.303e^{1.386\ldots} = 4$

d. $10^4 = 1.386\ldots$

e. $2.303 \times 10^4 = 1.386\ldots$

50. Solve the equation $\log(1 - x) = \log(100)$ for *x* using the One-to-One Property.

a. –101

b. –1

c. The equation has no solution.

d. –99

e. 101

51. Rewrite the logarithmic equation $\log_4 \frac{1}{16} = -2$ in exponential form.

a. $4^{16} = -2$

b. $4^{1/16} = -2$

c. $4^{-2} = \frac{1}{16}$

d. $\left[\frac{1}{16}\right]^{-2} = 4$

e. $4^{-2} = -\frac{1}{16}$

56. Evaluate the function $f(x) = \log_2 x$ at $x = \frac{1}{2}$ without using a calculator.

a. 0

b. –1

c. –2

d. 2

e. $\frac{1}{2}$

65. Identify the *x*-intercept of the function $f(x) = 4\ln(x-1)$.

a. $x = 1$

b. $x = 0$

c. $x = 4$

d. $x = 2$

e. The function has no *x*-intercept.