

Name \_\_\_\_\_

**Write the logarithmic equation in its equivalent exponential form.**

1)  $\log_9 729 = 3$

2)  $\log_7 343 = 3$

3)  $\log_{1/5} \frac{1}{625} = 4$

4)  $\log_6 \frac{1}{36} = -2$

5)  $\log_{1/4} 64 = -3$

6)  $\log_8 2 = \frac{1}{3}$

7)  $\log_{26} \sqrt[7]{26} = \frac{1}{7}$

8)  $\log_{1/8} \frac{1}{512} = 3$

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

10)  $\log_{1/9} 729 = -3$

**Write the exponential equation in its equivalent logarithmic form.**

11)  $7^3 = 343$

12)  $6^2 = 36$

13)  $4^3 = 64$

14)  $4^2 = 16$

15)  $10^3 = 1000$

16)  $10^4 = 10,000$

17)  $10^{-3} = 0.001$

18)  $10^{-2} = 0.01$

19)  $\frac{1}{7} = \frac{1}{7}$

20)  $\frac{1}{3} = \frac{1}{3}$

$$21) \left(\frac{1}{5}\right)^2 = \frac{1}{25}$$

$$22) \left(\frac{1}{2}\right)^3 = \frac{1}{8}$$

$$23) 4^{-2} = \frac{1}{16}$$

$$24) 5^{-3} = \frac{1}{125}$$

$$25) \left(\frac{1}{4}\right)^{-3} = 64$$

$$26) \left(\frac{1}{5}\right)^{-2} = 25$$

$$27) 4^{1/2} = 2$$

$$28) 16^{3/4} = 8$$

$$29) 32^{2/5} = 4$$

$$30) 26^{1/4} = \sqrt[4]{26}$$

$$31) 12^{1/4} = \sqrt[4]{12}$$

**Evaluate.**

$$32) \log_3 9$$

$$33) \log_3 27$$

$$34) \log_{10} 100$$

$$35) \log_2 2$$

$$36) \log_{1/8} \frac{1}{64}$$

$$37) \log_7 \frac{1}{49}$$

$$38) \log_{1/2} 4$$

$$39) \log_7 1$$

$$40) \log_{36} 6$$

$$41) \log_{1/9} \frac{1}{3}$$

$$42) \log_{81} \frac{1}{9}$$

$$43) \log_{10} 1$$

$$44) \log_7 7$$

$$45) \log_{1/5} \frac{1}{25}$$

$$46) \log_6 \frac{1}{36}$$

$$47) \log_{1/2} 8$$

$$48) \log_6 1$$

$$49) \log_{25} 5$$

$$50) \log_{1/81} \frac{1}{3}$$

$$51) \log_{1/25} \frac{1}{5}$$

$$52) \log_{49} \frac{1}{7}$$

$$53) \log_{25} \frac{1}{5}$$

$$54) \log_{64} \frac{1}{8}$$

**Solve.**

$$55) \log_5 x = 2$$

$$56) \log_4 x = -3$$

$$57) \log_8 x = \frac{1}{3}$$

$$58) \log_x 512 = 3$$

$$59) \log_x 7 = \frac{1}{3}$$

$$60) \log_x \frac{27}{64} = 3$$

$$61) \log_x 64 = -3$$

$$62) \log_{216} 6 = x$$

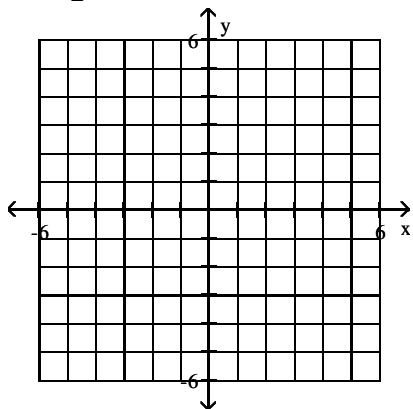
$$63) \log_{16} 32 = x$$

$$64) \log_{1/5} 625 = x$$

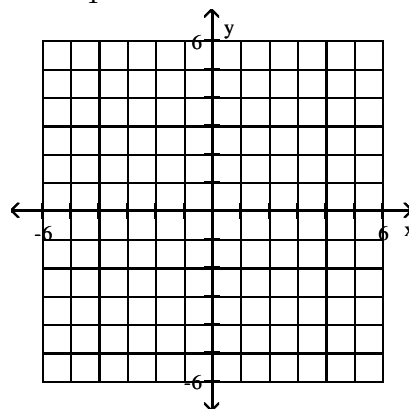
$$65) \log_x \frac{125}{216} = 3$$

Graph the function.

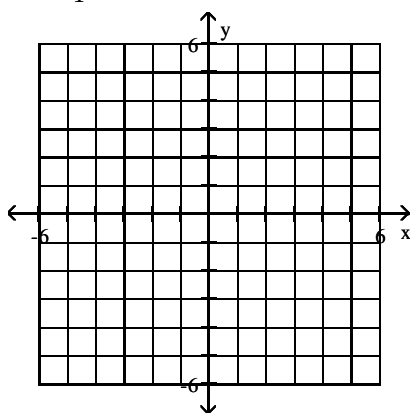
66)  $f(x) = \log_2 x$



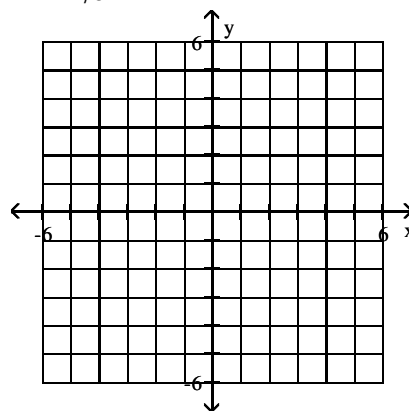
69)  $f(x) = -\log_4 x$



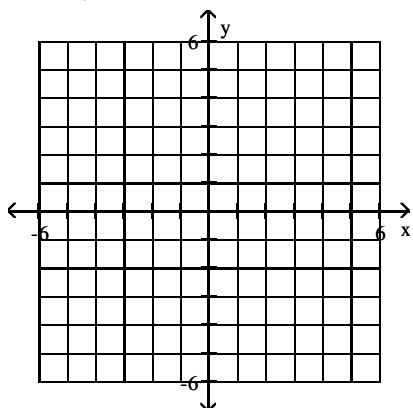
67)  $f(x) = \log_4 x$



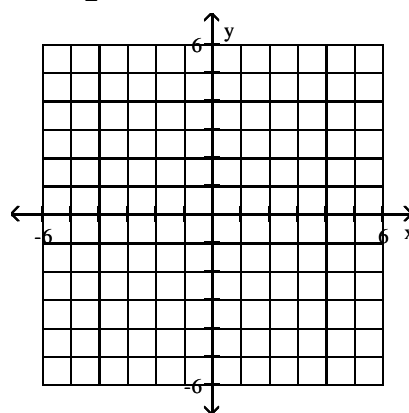
70)  $f(x) = \log_{1/8} x$



68)  $f(x) = \log_{1/2} x$



71)  $f(x) = -\log_2 x$



## Answer Key

Testname: WS8.3V01

1)  $9^3 = 729$

2)  $7^3 = 343$

3)  $\left(\frac{1}{5}\right)^4 = \frac{1}{625}$

4)  $6^{-2} = \frac{1}{36}$

5)  $\left(\frac{1}{4}\right)^{-3} = 64$

6)  $8^{1/3} = 2$

7)  $26^{1/7} = \sqrt[7]{26}$

8)  $\left(\frac{1}{8}\right)^3 = \frac{1}{512}$

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

10)  $\left(\frac{1}{9}\right)^{-3} = 729$

11)  $\log_7 343 = 3$

12)  $\log_6 36 = 2$

13)  $\log_4 64 = 3$

14)  $\log_4 16 = 2$

15)  $\log_{10} 1000 = 3$

16)  $\log_{10} 10,000 = 4$

17)  $\log_{10} 0.001 = -3$

18)  $\log_{10} 0.01 = -2$

19)  $\log_{1/7} \frac{1}{7} = 1$

20)  $\log_{1/3} \frac{1}{3} = 1$

21)  $\log_{1/5} \frac{1}{25} = 2$

22)  $\log_{1/2} \frac{1}{8} = 3$

23)  $\log_4 \frac{1}{16} = -2$

24)  $\log_5 \frac{1}{125} = -3$

25)  $\log_{1/4} 64 = -3$

26)  $\log_{1/5} 25 = -2$

27)  $\log_4 2 = \frac{1}{2}$

28)  $\log_{16} 8 = \frac{3}{4}$

## Answer Key

Testname: WS8.3V01

$$29) \log_{32} 4 = \frac{2}{5}$$

$$30) \log_{26} \sqrt[4]{26} = \frac{1}{4}$$

$$31) \log_{12} \sqrt[4]{12} = \frac{1}{4}$$

$$32) 2$$

$$33) 3$$

$$34) 2$$

$$35) 1$$

$$36) 2$$

$$37) -2$$

$$38) -2$$

$$39) 0$$

$$40) \frac{1}{2}$$

$$41) \frac{1}{2}$$

$$42) -\frac{1}{2}$$

$$43) 0$$

$$44) 1$$

$$45) 2$$

$$46) -2$$

$$47) -3$$

$$48) 0$$

$$49) \frac{1}{2}$$

$$50) \frac{1}{4}$$

$$51) \frac{1}{2}$$

$$52) -\frac{1}{2}$$

$$53) -\frac{1}{2}$$

$$54) -\frac{1}{2}$$

$$55) 25$$

$$56) \frac{1}{64}$$

$$57) 2$$

$$58) 8$$

$$59) 343$$

$$60) \frac{3}{4}$$

Answer Key

Testname: WS8.3V01

61)  $\frac{1}{4}$

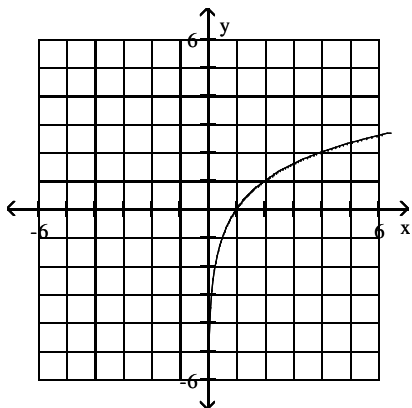
62)  $\frac{1}{3}$

63)  $\frac{5}{4}$

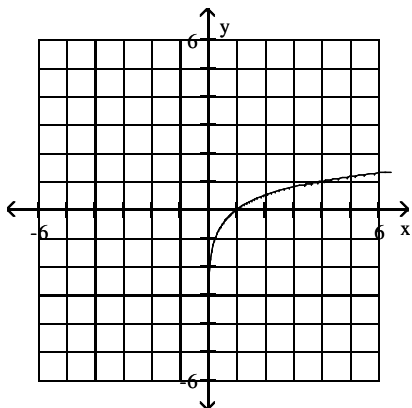
64) -4

65)  $\frac{5}{6}$

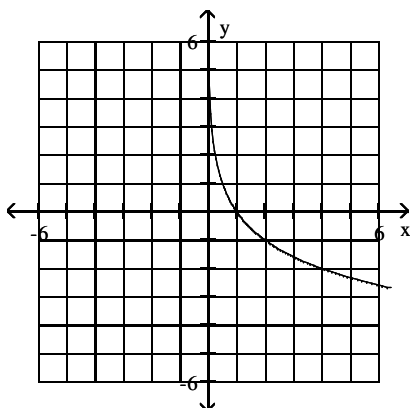
66)



67)

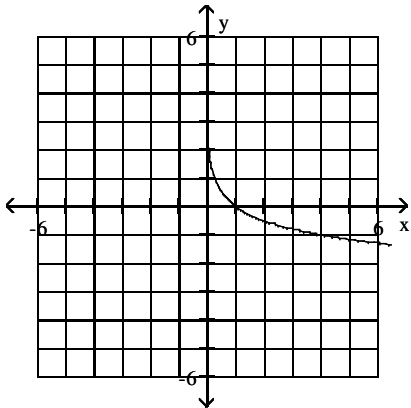


68)

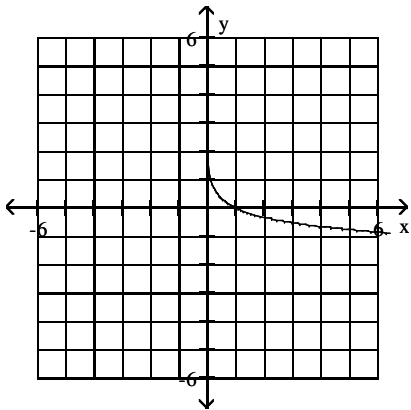


Answer Key  
Testname: WS8.3V01

69)



70)



71)

