

**No Calculators!!**

Rewrite in log base 10. use change of base.

1.  $\log_a 3 \frac{\log 3}{\log a}$     2.  $\log_5 25 \frac{\log 25}{\log 5}$     3.  $\log_7 22 \frac{\log 22}{\log 7}$     4.  $\log_8 16 \frac{\log 16}{\log 8}$

Find the inverse of each function.

5.  $a(x) = 5x + 2$     6.  $b(x) = \frac{x+1}{5}$     7.  $c(x) = \frac{x}{7} - 2$     8.  $d(x) = \frac{6}{x-4}$

Solve for  $x$ .

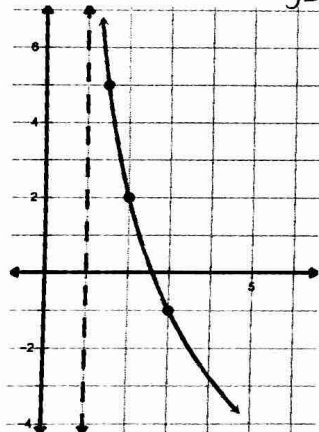
9.  $\log_4 64 = x$     10.  $\log_x 3 = \frac{1}{3}$     11.  $\log_{16} 2 = x$     12.  $\log_7 x = -2$

Sketch a complete graph. see next link for graphs

13.  $m(x) = \log_3(x+2) - 3$     14.  $w(x) = \log_4(-x) + 1$

Find the equation of the logarithmic function.

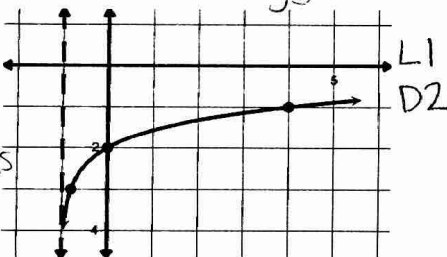
15. Base 2 PF:  $\log_2 x$



R1  
UP2  
VDby3  
over x-axis

$y = -3 \log_2(x-1) + 2$

16. Base 5 PF:  $\log_5 x$



$y = \log_5(x+1) - 2$

9.  $4^x = 64$   
 $4^x = 4^3$   
 $x = 3$

12.  $7^{-2} = x$   
 $\frac{1}{49} = x$

10.  $(x^{1/3})^3 = 3^3$   
 $x = 27$

11.  $16^x = 2$   
 $2^{4x} = 2$   
 $4x = 1$   
 $x = 1/4$

5.  $y = 5x + 2$   
 $x = 5y + 2$   
 $x - 2 = 5y$   
 $\frac{x-2}{5} = y$   
 $\frac{x-2}{5} = a^{-1}(x)$

7.  $y = \frac{x}{7} - 2$   
 $x = \frac{y}{7} - 2$   
 $7 \cdot x + 2 = \frac{y}{7} \cdot 7$   
 $7x + 14 = y$   
 $7x + 14 = c^{-1}(x)$

8.  $\frac{6}{x-4} = y$   
 $y-4 \cdot \frac{6}{y-4} = x \cdot y-4$   
 $6 = x(y-4)$   
 $\frac{6}{x} = y-4$   
 $\frac{6}{x} + 4 = y$   
 $\frac{6}{x} + 4 = d^{-1}(x)$

6.  $y = \frac{x+1}{5}$   
 $5 \cdot x = \frac{y+1}{5} \cdot 5$   
 $5x = y+1$   
 $5x-1 = y$   
 $5x-1 = b^{-1}(x)$

P296 #1-4

1. a)  $\log 55$   
b)  $\log 2^3 = \log 8$   
c)  $\log^{28/7} = \log 4$   
d)  $\log 6^{-2} = \log 1/36$   
e)  $\log 7 + \log 9$   
 $\log 63$

4A)

2. a)  $\log 22 = \log 2 + \log 11$   
b)  $\log 13 = \log 39 - \log 3$   
c)  $\log 39 = \log 13 + \log 3$   
d)  $\log 7 = \log 42 - \log 6$
- } answers may vary

3. a)  $x \log 5$   
b)  $2 \log x$   
c)  $1/2 \log 3$   
d)  $2x \log 7$

4. a) T  
b) F  $\log 15$   
c) T  
d) T  
e) F  $\log 3$   
f) F  $1/2 \log 7$   
g) F  $\log 16.807 = 5 \log 7$   
h) T  
i) F  $\log_4 3$   
j) T