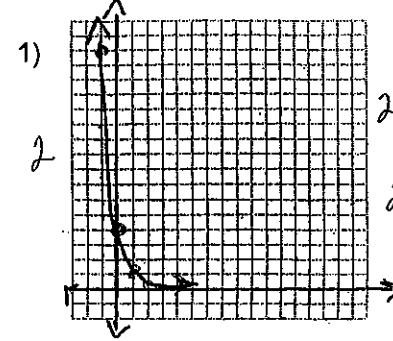


NO CALCULATORS!!



Graph:  $y = 4(.25)^x$ . State the function's domain & range.

D: all  $\mathbb{R}$  #'s

R:  $\{y \mid y > 0\}$

x	y
0	4
2	1/4
-1	16
1	1

If given an exponential equation, write the equivalent logarithmic form. If given a logarithmic equation, write the equivalent exponential form.

*3 each*

2)  $\log_{225} 15 = 1/2$   $225^{1/2} = 15$

3)  $216^{2/3} = 36$   $\log_{216} 36 = 2/3$

4)  $1/2$  Evaluate:  $\log_{16} 4$   $\log_{16} 16^{1/2}$

5) 12 Evaluate:  $3^{\log_3 4} + \log_5 25^4 = 4 + \log_5 5^8 = 4 + 8 = 12$

*give 2/3*

$\log_5 30$  Write as a single log:  $\log_5 225 - \log_5 15 + \log_5 2$

7) 5 Solve:  $\log_6 (x+4) + \log_6 (x-1) = 2$   
 $\log_6 x^2 + 3x - 4 = 2$

$x^2 + 3x - 4 = 36$   
 $x^2 + 3x - 40 = 0$   
 $(x+8)(x-5) = 0$   
 $x = -8, x = 5$

8) 9 Solve:  $2 \log_7 x = \log_7 27 + \log_7 3$   
*give  $x^2 = 81$*

9) 5 Solve:  $3 \log_2 x - \log_2 5 = \log_2 25$

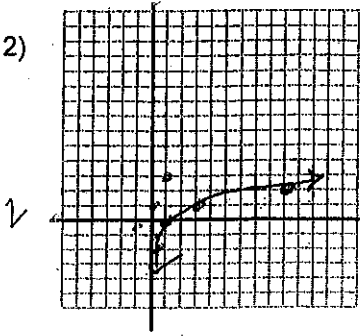
*-1/2 only  
 $x < 2^{1/2}$*

10)  $0 < x < 1/8$  Solve:  $\log_2 x < -3$   
 $x < 2^{-3}$

11)  $x < -15/17$  Solve:  $(1/32)^{x+3} > 16^{3x}$   
 $(2^{-5})^{x+3} > (2^4)^{3x}$   
 $-5x - 15 > 12x$   
 $-15 > 17x$   
 $-15/17 > x$

$(\frac{1}{32})^2 > 16^3$   
 $(2^{-5})^2 > (2^4)^3$   
 $-10 > 12$   
 $(\frac{1}{2})^{5(x+3)} > (\frac{1}{2})^{-4(3x)}$   
 $5x + 15 > -12x$   
 $17x > -15$   
 $x > -15/17$

12)

Graph:  $y = \log_3 x$ ; State the domain & range of the function.

$$D: \{x \mid x \in \mathbb{R}^+\}$$

$$R: \{y \mid y \in \mathbb{R}\}$$

$y$	$x$
1	3
0	1
-1	1/3
-2	1/9
2	9

Use  $\log_3 4 = 1.2619$  to approximate the value of the next two expressions.

13) 3.2619  $\log_3 36$

$$\log_3 4 + \log_3 9 = 71$$

14) 5.0474  $\log_3 256$

$$\log_3 4^4 = 4(1.2619)$$

$$\log_3 4 + \log_3 \frac{64}{4} + 1$$

$$\log_3 4 + \log_3 4^3$$

$$\log_3 4 + 3(\log_3 4)$$

$$4 \sqrt[4]{256} = 4 \sqrt[4]{2^8} = 4 \cdot 2^2 = 16$$

CALCULATORS PERMITTED

*Search*

Find the final amount of each investment.

15) \$1,511.66 \$750 earning 4.7% interest compounded quarterly for 15 years.

16) \$1,393.88 \$1,200 earning 3.75% interest compounded monthly for 4 years.

Evaluate:

17) .9138  $\log 8.2$

18) 1.086  $\log_6 7$

Adam's firm began with 23 clients. After 7 years, he now has 393 clients.

19)  $y = 23(1.5)^x$  Write an exponential growth equation describing the firm's growth.

$y = ab^x$   
 $393 = 23b^7$   
 $17.087 = b^7$

$b = 1.5$  (with  $x=7$  written above)

20) 1327 If the firm continues to grow at a consistent pace, how many clients will he have after 10 years?

$y = 23(1.5)^{10}$

The relative intensity (R) in decibels of a sound is determined by the formula :

$R = 10 \log \frac{I}{I_0}$

21)  $10^{12} * I_0 = I$  Compare the intensity of music at a rock concert with the threshold of hearing,  $I_0$ , if the decibel level is measured at 120.

22) \$173.40 The cost of a pair of tennis shoes increases about 5.1% every year. About how much would a \$50 pair of tennis shoes cost 25 years from now?