

**PMATH 12 - CHAPTER 5 - PRETEST**

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**Multiple Choice - PART 1 - NON-CALCULATOR - 15 MINUTES (#1-6)**

*CIRCLE the choice that best completes the statement or answers the question.*

1. Which exponential function is increasing?

- A.  $y = \left(\frac{1}{4}\right)^x$       B.  $y = \left(\frac{4}{3}\right)^x$       C.  $y = 0.1^x$       D.  $y = 0.137^x$

2. Write  $\frac{1}{16}$  as a power of 4.

- A.  $4^2$       B.  $4^{\frac{1}{2}}$       C.  $4^{-2}$       D.  $4^{-4}$

3. Solve:  $2^{x+1} = 16$

- A.  $x = 3$       C.  $x = -3$   
 B.  $x = \frac{15}{2}$       D.  $x = 15$

4. For which value of  $x$  is  $y = \log_9 x$  not defined?

- A.  $x = \frac{1}{9}$       B.  $x = 81$       C.  $x = -9$       D.  $x = 1$

5. Which of these expressions is NOT equal to  $\log 160$ ?

- A.  $\log 80 + \log 2$       B.  $\log 48 + \log 112$       C.  $\log 16 + \log 10$       D.  $\log 8 + \log 20$

6. Solve:  $3 \log 9 = \log x$

- A.  $x = \frac{1}{3}$       B.  $x = 12$       C.  $x = 729$       D.  $x = 27$

**MULTIPLE CHOICE - PART 2 - CALCULATOR may be used after 15 minutes**

7. This table of values represents an exponential function. Determine the missing value.

$x$	$y$
-1	100
0	1
1	

- A. -98      B. 0.01      C. 0.0001      D. 0.02

8. What is the  $y$ -intercept of the graph of  $y = 4^{-4x} + 3$ ?

- A. 1                      B. 3                      C. 259                      D. 4

9. Solve:  $125^{-2x} = 25^{x-24}$

- A.  $x = 6$                       C.  $x = \frac{25}{3}$   
B.  $x = 8$                       D.  $x = 3$

10. Evaluate  $\log_2 64$ .

- A. -6                      C. 32  
B. 6                      D. 62

11. Write this exponential expression as a logarithmic expression:  $3^{\frac{2}{3}} = \sqrt[3]{9}$

- A.  $\frac{2}{3} = \log_3(\sqrt[3]{9})$                       C.  $\frac{2}{3} = \log_{\sqrt[3]{9}}(3)$   
B.  $3 = \log_{\frac{2}{3}}(\sqrt[3]{9})$                       D.  $\log_3\left(\frac{2}{3}\right) = \sqrt[3]{9}$

12. Write as a single logarithm:  $4 \log_3 4 - \log_3 12 + 3$

- A.  $\log_3 4$                       C.  $\log_3 576$   
B.  $\log_3 \frac{64000}{3}$                       D.  $\log_3 7$

13. The graph of  $y + 4 = \log_6(x + 8)$  is the image of the graph of  $y = \log_6 x$  after it has been

- A. translated 8 units left and 4 units up.  
B. translated 8 units right and 4 units down.  
C. translated 8 units left and 4 units down.  
D. translated 8 units right and 4 units up.

14. Which logarithm is equal to  $\log_5(x + 6) + \log_5 x$ ?

- A.  $\log_5(8x)$                       B.  $\log_{10}(x^2 + 6x)$                       C.  $\log_5(2x + 6)$                       D.  $\log_5(x^2 + 6x)$

15. What is the solution of the equation  $6(5^{x+3}) = 4500$ ?

- A.  $x = \frac{\log 6}{\log 5}$                       C.  $x = \frac{\log 750}{\log 5}$   
B.  $x = \frac{\log 4500}{\log 30}$                       D.  $x = \log 250$



3. Use graphing technology to solve:  $7^{x+1} = 90$ . Give the solution to the nearest tenth.

4. Solve:  $\frac{\sqrt{27}}{9} = 3^{x-3}$ . WORK

ANSWER

5. Evaluate:  $\log_6\left(\frac{1}{216}\right)$  WORK

ANSWER

6. Write 2 as a logarithm with base 3.

7. Write as a single logarithm:  $\frac{4}{5}\log_3x - 3\log_3y - 6\log_3z$

8. Determine the  $y$ -intercept of the graph of  $y = \log_3(3(x+3))$ . Give your answer to the nearest tenth, if necessary.

9. Determine whether  $x = 4$  is a root of this equation.

$$\log(x-9) + \log(x-6) = 1$$

WORK

ANSWER

10. Solve:  $\log(2x - 10) + \log(x - 6) = \log(x - 5) + \log(x - 1)$

WORK

ANSWER

**Problem - Show your work**

1. a) Graph the exponential function  $y = \left(\frac{1}{2}\right)^x$ .

b) Determine:

i) whether the function is increasing or decreasing

ii) the intercepts

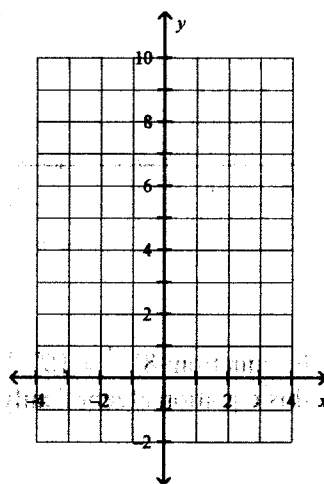
X-INT

Y-INT

iii) the equation of the asymptote

iv) the domain of the function

v) the range of the function



2. Write  $5(\log x - \log y)$  as a single logarithm.

3. a) Graph  $y = 3 \log_6(-3(x+6)+2)$  on the grid below.

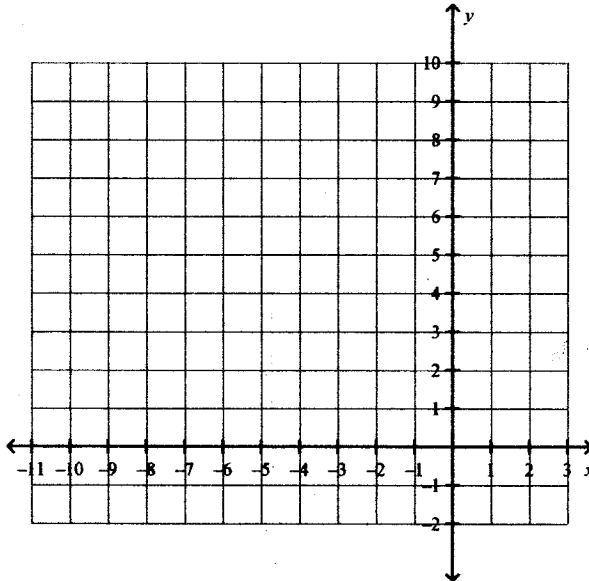
b) Identify i) the intercepts x-int

y-int

ii) the equations of any asymptotes

iii) the domain

and range



4. Consider the equation:  $8^{x-3} = 16^{x+3}$

a) Solve this equation algebraically using logarithms.

b) Solve this equation using common bases.