

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

Change  $\log_a b = c$  to exponential form.

- A.  $b = a^c$   
 B.  $b = c^a$   
 C.  $a = b^c$   
 D.  $a = c^b$

Change  $a = b^c$  to logarithmic form.

- A.  $\log_a b = c$   
 B.  $\log_b c = a$   
 C.  $\log_c a = b$   
 D.  $\log_b a = c$

Change to exponential form:  $\log_x 125 = \frac{3}{2}$ 

- A.  $125 = x^{\frac{3}{2}}$   
 B.  $125 = \left(\frac{3}{2}\right)^x$   
 C.  $x^{125} = \frac{3}{2}$   
 D.  $125^{\frac{3}{2}} = x$

Determine an equivalent expression for  $\log P - \log Q$ .

- A.  $\log(P - Q)$   
 B.  $\log PQ$   
 C.  $\log \frac{P}{Q}$   
 D.  $\frac{\log P}{\log Q}$

5. If  $\log 3 = x$  and  $\log 2 = y$ , find each logarithm in terms of  $x$  and  $y$ :

a)  $\log 9 =$  \_\_\_\_\_

(b)  $\log \left(\frac{1}{4}\right) =$  \_\_\_\_\_

c)  $\log 36 =$  \_\_\_\_\_

(d)  $\log 300 =$  \_\_\_\_\_

e)  $\log .002 =$  \_\_\_\_\_

(f)  $\log_2 3 =$  \_\_\_\_\_

6. If  $\log_5 4 = x$ , find each logarithm in terms of  $x$ :

a)  $\log_5 16 =$  \_\_\_\_\_

(b)  $\log_5 80 =$  \_\_\_\_\_

c)  $\log_{25} 4 =$  \_\_\_\_\_

(d)  $\log_5 8 =$  \_\_\_\_\_

Express as a single logarithm:

$$\log a - 2 \log b - \log c$$

- A.  $\log \frac{ac}{2b}$
- B.  $\log \frac{ac}{b^2}$
- C.  $\log \frac{a}{2bc}$
- D.  $\log \frac{a}{b^2c}$

Express  $\log a - \log b + 2 \log c$  as a single logarithm.

- A.  $\log \frac{ac^2}{b}$
- B.  $\log \frac{a}{bc^2}$
- C.  $\log \frac{ab}{2c}$
- D.  $\log \frac{a}{2bc}$

11. Write as a single log with base 2:

$$\log_2 x - \log_4 x$$

Express  $3 \log a + \log b - \log c$  as a single logarithm.

- A.  $\log \left( \frac{a^3 b}{c} \right)$
- B.  $\log (a^3 + b - c)$
- C.  $3 \log \left( \frac{ab}{c} \right)$
- D.  $\log \left( \frac{3ab}{c} \right)$

Express  $\log_5 30$  using logarithms in base 4.

- A.  $\log_4 30 - \log_4 5$
- B.  $\frac{\log_4 5}{\log_4 30}$
- C.  $\frac{\log_4 30}{\log_4 5}$
- D.  $\frac{\log_{30} 4}{\log_5 4}$