

**Directions:** Select the letter of the correct answer for each question.

1) Express  $\log_5 x + \log_5 y = z$  in exponential form

- (a)  $5^z = x + y$
- (b)  $5^x = zy$
- (c)  $5^z = xy$
- (d)  $5^x = z + y$

2) What is the value of  $\frac{1 - \log 100}{\log 100 + 1}$ ?

- (a)  $-\frac{1}{3}$
- (b)  $\frac{1}{2}$
- (c)  $-\frac{1}{2}$
- (d)  $\frac{1}{3}$

3) Expand  $\log_a(2(x - y))^b$

- (a)  $b \log_a 2 + \log_a(x - y)$
- (b)  $b(\log_a 2 + \log_a(x - y))$
- (c)  $b \log_a 2x + \log_y$
- (d)  $\log_a 2 + b \log_a(x - y)$

4) If  $\log_a p = 3$  and  $\log_a q = 4$ , what is the value of  $(\log_a \frac{p}{q})^2$

- (a) -2
- (b) 2
- (c) 1
- (d) -1

5) Express  $9 \log_2 x + 3 \log_2 y$  as a single logarithm.

- (a)  $\log_2 \frac{9x}{3y}$
- (b)  $\log_2 x^9 y^3$
- (c)  $\log_2 9xy^3$
- (d) None of the above