

1. Express in logarithmic form  $49^{1/2} = 7$

- (A)  $\log_7 49 = 1/2$
- (B)  $\log_{49} 7 = 1/2$
- (C)  $\log_{49} 1/2 = 7$
- (D)  $\log_{1/2} 7 = 49$

2. Express in exponential form  $\log_9 27 = 3/2$

- (A)  $(3/2)^9 = 27$
- (B)  $27^{3/2} = 9$
- (C)  $9^{3/2} = 27$

3. Evaluate the following  $\log_2 (32)^{1/3}$

- (A)  $3/5$
- (B)  $5/3$
- (C)  $4$
- (D)  $1/4$

4. Solve  $\log x = \log 5 + 2\log 3$

- (A)  $x = 14$
- (B)  $x = 75$
- (C)  $x = 8$
- (D)  $x = 45$

5. Write as a single log

$1/2 \log_5 X - 1/4 \log_5 Z$

- (A)  $\log_5 \frac{(x)^{1/2}}{(z)^{1/4}}$
- (B)  $\log_5 2xz$
- (C)  $\log_5 X^2 Z^4$

6. Solve  $3^{2x-1} = 5$

- (A)  $x = 1.46$
- (B)  $x = 4.9$
- (C)  $x = 12.3$
- (D)  $x = 1.2$

7. A sample of 500 cells in a medical research lab doubles every 20 min.  
a) Determine a formula for the number of cells at time  $t$ , where  $t$  is measured in minutes.  
b) How long will it take for the population to reach 18 000? Answer correct to 2 decimal places.

- (A) (a)  $N(t) = 500(2)^t$  (b) 103.40 min  
 (B) (a)  $N(t) = 500(2)^{t/20}$  (b) 103.40 min  
 (C) (a)  $N(t) = 500(2)^{t/20}$  (b) 10.34min

8. A new car costs \$23 000. In 5 years it will be worth \$9500. What is the rate of depreciation per year? Answer in percent, correct to 2 decimal places.

- (A) 16.21%  
 (B) 20.21%  
 (C) 83.79%

9. Solve  $(1/64)^{x+2} = 8^{2x}$

- (A)  $x = 1$   
 (B)  $x = -1$   
 (C)  $x = 2$   
 (D)  $x = -2$

10. Find the inverse function for  $f(x) = -2/(x - 5)$

- (A)  $F(x)^{-1} = 5(x - 2)/x$   
 (B)  $F(x)^{-1} = (x - 2)/5x$   
 (C)  $F(x)^{-1} = (5x - 2)/x$   
 (D)  $F(x)^{-1} = (2x - 5)x$