

7

$$\text{Log}_3 54 - \text{Log}_3 2$$

$$\text{Log}_3 \frac{54}{2}$$

$$\text{Log}_3 27$$

$$\text{Log}_3 3^3$$

$$= 3$$

8

$$4 \text{Log}_2 X + 7 \text{Log}_2 Y$$

$$\text{Log}_2 X^4 + \text{Log}_2 Y^7$$

$$\text{Log}_2 (X^4 Y^7)$$

$$\text{Log } m + \text{Log } n$$

$$\text{Log } m \cdot n$$

9

$$2 \text{Ln } X + 3 \text{Ln } Y - 4 \text{Ln } Z$$

$$\text{Ln } X^2 + \text{Ln } Y^3 - \text{Ln } Z^4$$

$$\text{Ln } (X^2 Y^3) - \text{Ln } Z^4$$

$$\text{Ln } \frac{X^2 Y^3}{Z^4}$$

10

$$\frac{1}{5} (\text{Log}_3 X - 4 \text{Log}_3 Y) + 5 \text{Log}_3 (X-7)$$

$$\frac{1}{5} (\text{Log}_3 X - \text{Log}_3 Y^4) + \text{Log}_3 (X-7)^5$$

$$\frac{1}{5} \text{Log}_3 \frac{X}{Y^4} + \text{Log}_3 (X-7)^5$$

$$\text{Log}_3 \left(\frac{X}{Y^4} \right)^{\frac{1}{5}} + \text{Log}_3 (X-7)^5$$

$$\text{Log}_3 \sqrt[5]{\frac{X}{Y^4}} + \text{Log}_3 (X-7)^5$$

$$\text{Log}_3 \left[\sqrt[5]{\frac{X}{Y^4}} (X-7)^5 \right]$$

11

$$\text{Ln } X + \text{Ln } (X^2 - 9) - \text{Ln } 7 - \text{Ln } (X+3)$$

$$\text{Ln } [X(X^2 - 9)] - \text{Ln } 7 - \text{Ln } (X+3)$$

$$\text{Ln } \frac{X(X^2 - 9)}{7} - \text{Ln } (X+3)$$

$$\text{Ln } \frac{X(X^2 - 9)}{7(X+3)}$$

$$\text{Ln } \frac{X(X+3)(X-3)}{7(X+3)}$$

$$\text{Ln } \frac{X(X-3)}{7}$$

12

$$\text{Log}_5 13$$

CHANGE OF BASE FORMULA

$$\frac{\text{Log } 13}{\text{Log } 5} \text{ or } \frac{\text{Ln } 13}{\text{Ln } 5}$$

$$1.5937$$

13

$$y = \text{Log}_5 (X+3)$$

$$= \frac{\text{Log } (X+3)}{\text{Log } 5}$$

