

## Asah Kemampuan 3.2

1. Dengan menggunakan sifat logaritma tentukan nilai berikut
  - a.  $^2\log 4$
  - b.  $^4\log 64$
  - c.  $^6\log 216$
  - d.  $^{\frac{1}{5}}\log 625$
2. Sederhanakan bentuk logaritma berikut
  - a.  $^2\log 50 + ^2\log 8 - ^2\log 100$
  - b.  $^2\log 24 + ^2\log 15 + ^2\log 30 - ^2\log 6$
  - c.  $^2\log 16 + ^3\log 27 - ^5\log \frac{1}{625}$
  - d.  $^2\log \sqrt{8} + ^2\log \sqrt{2} - ^2\log 16$
3. Sederhanakan bentuk logaritma berikut
  - a.  $^2\log 3 \cdot ^3\log 64$
  - b.  $^2\log 3 \cdot ^2\log 5 \cdot ^5\log 6 \cdot ^6\log 8$
  - c.  $^4\log 9 \cdot ^3\log 125 \cdot ^{25}\log 16$
4. Jika diketahui  $\log 3 = 0,4771$  dan  $\log 5 = 0,6990$  tentukan nilai berikut
  - a.  $\log 25$
  - b.  $\log 45$
  - c.  $\log 0,36$

Jawabkan

1. a.  $^2\log 4 = \cancel{^2\log 2^2} = 2$
- b.  $^4\log 64 = \cancel{^4\log 4^3} = 3$
- c.  $^6\log 216 = ^6\log 6^3 = 3$
- d.  $^{\frac{1}{5}}\log 625 = ^5\log 5^4 = 4$
2. a.  $^2\log 50 + ^2\log 8 - ^2\log 100$   
 $\cancel{^2\log 50} + \cancel{^2\log 8} - \cancel{^2\log 100}$   
 $^2\log 50 + 3 - 100$   
 $^2\log \frac{50}{100} + 3$   
 $^2\log \frac{1}{2} + 3 = \cancel{^2\log 2^{-1}} + 3 = -1 + 3 = 2$



$$b. {}^2\log 24 = {}^2\log 15 + {}^2\log 30 = {}^2\log 6$$

$$= 2 \log \frac{24 \times 15}{30 \times 6}$$

$$= 2 \log 4 \times 2$$

$$= 2 \log 8$$

$$= 2 \log 2^3 = 3$$

$$c. {}^2\log 16 + {}^3\log 27 - {}^5\log \frac{1}{625}$$

$$= {}^2\log 2^4 + {}^3\log 3^3 - {}^5\log 5^{-4}$$

$$= 4 - 3 - (-4)$$

$$= -4$$

$$d. {}^2\log \sqrt{8} + {}^2\log \sqrt{2} - {}^2\log 16$$

$${}^2\log 2^{3/2} + {}^2\log 2^{1/2} - {}^2\log 2^{4^2}$$

$${}^2\log 2^9 + {}^2\log 2^2 - {}^2\log 2^{16}$$

$$9 + 2 - 16$$

$$11 - 16 = -5$$

$$3. a. {}^2\log 3 \cdot {}^3\log 64$$

$$= {}^2\log 3 \cdot {}^3\log 2^6$$

$$= {}^3\log 2^6$$

$$= 6$$

$$b. {}^2\log 3 \cdot {}^3\log 5 \cdot {}^5\log 6 \cdot {}^6\log 8$$

$${}^2\log 3 \cdot {}^3\log 5 \cdot {}^5\log 6 \cdot {}^6\log 2^3$$

$$= {}^3\log 2^3$$

$$= 3$$

$$c. {}^4\log 9 \cdot {}^3\log 125 \cdot {}^{27}\log 16$$

$$= {}^4\log 3^2 \cdot {}^3\log 5^3 \cdot {}^{27}\log 4^2$$

$$= 2 \cdot 3 \cdot 2 \cdot 2 \cdot {}^4\log 4$$

$$= 24 \cdot {}^4\log 4$$

$$= 24 \cdot 1$$

$$= 24$$



$$\begin{aligned} 4. a. \log 25 &= 5 \times 5 \\ &= \log 5 + \log 5 \\ &= 0,6990 + 0,6990 \\ &= 1,3980 \end{aligned}$$

$$\begin{aligned} b. \log 45 &= 7 \times 5 \\ &= \log 7 + \log 5 \\ &= \log 7 + 0,6990 \\ &= 1,6990 \end{aligned}$$

$$\begin{aligned} c. \log 0,36 &= \log \frac{36}{100} \\ &= \log \frac{9}{25} = \log 9 - \log 25 \end{aligned}$$

$$\begin{aligned} &= \log 3 + \log 3 - \log 5 + \log 5 \\ &= 0,4771 + 0,4771 - 0,6990 + 0,6990 \\ &= 0,9842 \end{aligned}$$