

$$\textcircled{3} 1) 2^x = 256$$

$$\log_2 256 = x$$

$$x = 8$$

Jawab: 8

$$2) 2^x = 300$$

$$\log_2 300 = x$$

$$\log_2 (10^2 \cdot 3) = \log_2 10^2 + \log_2 3 = \log_2 (2 \cdot 5)^2 + \log_2 3 = 2 \cdot \log_2 2 +$$

$$+ 2 \cdot \log_2 5 + \log_2 3 = 2 + 2 \log_2 5 + \log_2 3$$

$$\text{Jawab: } 2 + 2 \log_2 5 + \log_2 3$$

$$3) \log_8 2^{8x-4} = 4$$

$$(8x-4) \cdot \log_8 2 = \log_8 4096$$

$$8x-4 = \frac{\log_8 4096}{\log_8 2} = \log_2 4096 = 12$$

$$8x = 16$$

$$x = 2$$

Jawab: 2

$$4) 3 \log_9 (5x-5) = 5$$

$$\log_9 3^{\log_9 (5x-5)} = \log_9 5$$

$$\log_9 (5x-5) \cdot \log_9 3 = \log_9 5$$

$$\log_9 (5x-5) \cdot \frac{1}{2} \log_3 3 = \log_9 5$$

$$\log_9 (5x-5) = 2 \cdot \log_9 5$$

$$\log_9 (5x-5) = \log_9 5^2$$

$$5x-5 = 5^2$$

$$5x = 30$$

$$x = 6$$

Jawab: 6

$$5) x \log_3 x + 1 = 9$$

$$\text{Dik: } x > 0, x \neq 1$$

$$\log_3 x \log_3 x + 1 = \log_3 9$$

$$(\log_3 x + 1) \cdot \log_3 x = 2$$

$$\text{Misal } \log_3 x = t, \text{ maka:}$$

$$(t+1) \cdot t = 2$$

$$t^2 + t - 2 = 0$$

$$D = b^2 - 4ac = 1^2 - 4 \cdot 1 \cdot (-2) = 1 + 8 = 9$$

$$t_1 = \frac{-b + \sqrt{D}}{2a} = \frac{-1 + 3}{2} = 1$$

$$t_2 = \frac{-b - \sqrt{D}}{2a} = \frac{-1 - 3}{2} = -2$$

$$\log_3 x_1 = 1$$

$$x = 3$$

$$\log_3 x_2 = -2$$

$$x = 3^{-2} = \frac{1}{9}$$

Jawab: $\frac{1}{9}; 3$

$$\textcircled{4} 6) \log_4 16 = 4$$

$$7) \log_5 \frac{1}{25} = \log_5 \frac{1}{5^2} = \log_5 5^{-2} = -2$$

$$8) \log_{25} 5 = \log_{5^2} 5 = \frac{1}{2}$$

$$9) \log_3 \sqrt{27} = \log_3 27^{\frac{1}{2}} = \frac{1}{2} \cdot \log_3 27 = \frac{1}{2} \cdot 3 = \frac{3}{2}$$

$$10) \log_2 12 - \log_2 3 = \log_2 \frac{12}{3} = \log_2 4 = 2$$

$$11) \log_6 12 + \log_6 3 = \log_6 (12 \cdot 3) = \log_6 36 = 2$$

$$12) e^{\ln 5} = 5 \log_e e = 5$$

$$13) \frac{\log_2 225}{\log_2 15} = \log_{15} 225 = 2$$