

14 a

$$3^{2x} - 4 \cdot 3^x - 5 = 0$$

$$(3^x)^2 - 4 \cdot 3^x - 5 = 0$$

Substit $3^x = p$

dan $(3^x)^2 = p^2$

$$p^2 - 4p - 5 = 0$$

$$(p-5)(p+1) = 0$$

$$p-5=0 \vee p+1=0$$

$$p=5 \vee p=-1$$

$$3^x = 5 \vee 3^x = -1$$

$$x = {}^3\log 5 \vee \underline{\underline{ku}}$$

14

$$4^{2x} + 4^x - 12 = 0$$

$$4^{x \cdot 2} + 4^x - 12 = 0$$

$$(4^x)^2 + 1 \cdot 4^x - 12 = 0$$

Stel $4^x = p$

$$p^2 + 1 \cdot p - 12 = 0$$

$$(p+4)(p-3) = 0$$

$$p+4=0 \vee p-3=0$$

$$p=-4 \vee p=3$$

$$4^x = -4 \vee 4^x = 3$$

$$\text{Nu } x = {}^4\log 3$$

$$14 \underline{c} \quad (2^x - 2\sqrt{2})(2^x - \frac{1}{8}) = 0$$

$$2^x - 2\sqrt{2} = 0 \quad \vee \quad 2^x - \frac{1}{8} = 0$$

$$2^x = 2\sqrt{2} \quad \vee \quad 2^x = \frac{1}{8}$$

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

$$x = 1\frac{1}{2} \quad \vee \quad x = -3$$

14 d

$$5^{2x} - 20 \cdot 5^x = 125$$

$$5^{2x} - 20 \cdot 5^x - 125 = 0$$

Sub $5^x = p$

$$p^2 - 20p - 125 = 0$$

$$(p - 25)(p + 5) = 0$$

$$p - 25 = 0 \vee p + 5 = 0$$

$$p = 25 \vee p = -5$$

$$5^x = 25 \vee 5^x = -5$$

$$5^x = 5^2 \quad \text{lu}$$

$$x = 2$$

14e

$$(4^x - 1)(4^x + 1) = 27$$

$$4^{2x} - 1 = 27$$

$$4^{2x} = 28$$

$$2x = {}_4 \log 28$$

$$x = \frac{{}_4 \log 28}{2}$$

$$\rightarrow 16^x = 28$$

$$x = {}_{16} \log 28$$

$$(a+b)(a-b) = a^2 - b^2$$

14f

$$2^x(2^x - 1) = 32(2^x - 1)$$

$$2^x = 32 \quad \vee \quad 2^x - 1 = 0$$

$$2^x = 2^5 \quad \vee \quad 2^x = 1$$

$$x = 5 \quad \vee \quad x = 0$$

$$a \cdot b = a \cdot c$$

$$a = 0 \quad \vee \quad b = c$$

$$7 \underline{e} \quad \log(12q) - \log(6q^3) = 2 \cdot \log p$$

$$\log\left(\frac{12q}{6q^3}\right) = \log(p^2)$$

$$p^2 = \frac{12q}{6q^3}$$

$$p^2 = \frac{2}{q^2}$$

7 f

$$4 \cdot {}^5\log(3R) + 3 \cdot {}^5\log(Q-1) = 2$$

$${}^5\log((3R)^4) + {}^5\log((Q-1)^3) = 2$$

$${}^5\log((3R)^4 \cdot (Q-1)^3) = {}^5\log 25$$

$$(3R)^4 \cdot (Q-1)^3 = 25$$

2

2 · 1

2 · ${}^5\log 5$

${}^5\log 5^2$

$$10 \underline{a} \quad {}^3\log 5x + {}^3\log(2x-4) =$$

$${}^3\log(5x \cdot (2x-4)) =$$

$${}^3\log(10x^2 - 20x)$$

8 c

$$\log(3-x) + 2 \cdot \log(x+1)$$

$$\log(3-x) + \log((x+1)^2)$$

$$\log(3-x) + \log(x^2 + 2x + 1)$$

$$\log((3-x) \cdot (x^2 + 2x + 1))$$

$$\log(3x^2 + 6x + 3 - x^3 - 2x^2 - x)$$

$$\log(-x^3 + x^2 + 5x + 3)$$