

§ 80 Nr 4

$$a) \quad 4^x = 2 \Rightarrow (2^2)^x = 2^1 \Rightarrow 2^{2x} = 2^1 \Rightarrow 2x = 1 \Rightarrow x = \underline{\underline{\frac{1}{2}}}$$

$$\text{oder } x \log(4) = \log(2) \Rightarrow x = \frac{\log(2)}{\log(4)} = \frac{1}{2}$$

b.) $4^x = -2$ keine Lösung weil $4^x > 0$ für alle x ist

$$c) \quad 4^{x^2} = 2 \Rightarrow (2^2)^{x^2} = 2^1 \Rightarrow 2^{2x^2} = 2^1 \Rightarrow 2x^2 = 1 \\ \Rightarrow x^2 = \frac{1}{2} \Rightarrow x_{1,2} = \pm \sqrt{\frac{1}{2}} = \underline{\underline{\pm \frac{\sqrt{2}}{2}}}$$

$$\text{oder } 4^{x^2} = 2 \Rightarrow x^2 \log(4) = \log(2) \Rightarrow x_{1,2} = \pm \sqrt{\frac{\log(2)}{\log(4)}} = \underline{\underline{\pm \frac{\sqrt{2}}{2}}}$$

$$d) \quad 2^{x^2} = 4 \Rightarrow 2^{x^2} = 2^2 \Rightarrow x^2 = 2 \Rightarrow \underline{\underline{x_{1,2} = \pm \sqrt{2}}}$$

$$\text{oder } 2^{x^2} = 4 \Rightarrow x^2 \log(2) = \log(4) \Rightarrow x_{1,2} = \pm \sqrt{\frac{\log(4)}{\log(2)}} = \underline{\underline{\pm \sqrt{2}}}$$