

Nr. 1) a) $\ln(e) = \ln(e^1) = \underline{\underline{1}}$; b) $\ln(e^3) = \underline{\underline{3}}$

c) $\ln(1) = \ln(e^0) = \underline{\underline{0}}$; d) $\ln\left(\frac{1}{e^2}\right) = \ln(e^{-2}) = \underline{\underline{-2}}$

e) $\ln(\sqrt{e}) = \ln(e^{\frac{1}{2}}) = \underline{\underline{\frac{1}{2}}}$; f) $e^{\ln(4)} = \underline{\underline{4}}$

g) $3 \cdot \ln(e^2) = \ln((e^2)^3) = \ln(e^6) = \underline{\underline{6}}$

h) $e^{\ln(2 \cdot 4)} = e^{\ln(8)} = \underline{\underline{8}}$; i) $e^{\ln(2^4)} = e^{\ln(16)} = \underline{\underline{16}}$

j) $e^{4 \ln(2)} = e^{\ln(2^4)} = e^{\ln(16)} = \underline{\underline{16}}$

k) $e^{\frac{1}{2} \ln(9)} = e^{\ln(9^{\frac{1}{2}})} = e^{\ln(3)} = \underline{\underline{3}}$

l) $\ln(e^2 \cdot e) = \ln(e^2 \cdot e^1) = \ln(e^3) = \underline{\underline{3}}$

m) $e^{\ln(3x)} = \underline{\underline{3x}}$; n) $\ln(e^{3x-1}) = \underline{\underline{3x-1}}$

o) $\ln(e \cdot e^x) = \ln(e^1 \cdot e^x) = \ln(e^{x+1}) = \underline{\underline{x+1}}$

p) $e^{\ln(4x-1)} = \underline{\underline{4x-1}}$; q) $\ln\left(\frac{1}{e} \cdot e^x\right) = \ln(e^{-1} \cdot e^x) = \underline{\underline{x-1}}$

r) $e^{2 \ln(x)} = e^{\ln(x^2)} = \underline{\underline{x^2}}$

Nr. 2) a) $e^x = 15 \mid \ln \Rightarrow \ln(e^x) = \ln(15) \Rightarrow x = \ln(15) \approx \underline{\underline{2,708}}$

b) $e^z = 2,4 \mid \ln \Rightarrow z = \ln(2,4) \approx \underline{\underline{0,875}}$

c) $e^{2x} = 7 \mid \ln \Rightarrow 2x = \ln(7) \Rightarrow x = \frac{\ln(7)}{2} \approx \underline{\underline{0,973}}$

d) $3 \cdot e^{4y} = 16,2 \mid :3 \Rightarrow e^{4y} = \frac{16,2}{3} \mid \ln \Rightarrow 4y = \ln(5,4) \mid :4$
 $y = \frac{\ln(5,4)}{4} \approx \underline{\underline{0,422}}$

e) $e^{-x} = 10 \mid \ln \Rightarrow -x = \ln(10) \mid \cdot (-1) \Rightarrow x = -\ln(10) = \ln(10^{-1})$
 $x = \ln\left(\frac{1}{10}\right) \approx \underline{\underline{-2,303}}$

f) $e^{4-x} = 3 \mid \ln \Rightarrow 4-x = \ln(3) \mid +x - \ln(3) \Rightarrow x = 4 - \ln(3) \approx \underline{\underline{2,901}}$

$$\text{Nr. 2) g) } 2 \cdot e^{6-3z} = 2 \quad | :2 \Rightarrow e^{6-3z} = 1 \quad | \ln$$

$$\Rightarrow 6 - 3z = \ln(1) = 0 \quad | -3z \Rightarrow 3z = 6 \Rightarrow \underline{z = 2}$$

$$\text{h) } e^{3-4a} = 5 \quad | \ln \Rightarrow 3 - 4a = \ln(5) \quad | +4a - \ln(5)$$

$$\Rightarrow 4a = 3 - \ln(5) \quad | :4 \Rightarrow a = \frac{3}{4} - \frac{\ln(5)}{4} \approx \underline{0,348}$$

$$\text{i) } e^{2x-3} = e \quad | \ln \Rightarrow 2x - 3 = \ln(e) = 1 \quad | +3$$

$$\Rightarrow 2x = 4 \quad | :2 \Rightarrow \underline{x = 2}$$

$$\text{j) } e^{5a-7} = 1 \quad | \ln \Rightarrow 5a - 7 = \ln(1) = 0 \quad | +7$$

$$\Rightarrow 5a = 7 \quad | :5 \Rightarrow \underline{a = \frac{7}{5} = 1,4}$$

$$\text{k) } e^{3z+4} = \frac{1}{e^2} = e^{-2} \quad | \ln \Rightarrow 3z + 4 = -2 \quad | -4$$

$$\Rightarrow 3z = -6 \quad | :3 \Rightarrow \underline{z = -2}$$

$$\text{l) } 2 \cdot e^{7x-3} = \sqrt{4e} = 2 \cdot e^{\frac{1}{2}} \quad | :2$$

$$\Rightarrow e^{7x-3} = 1 \cdot e^{\frac{1}{2}} \quad | \ln$$

$$7x - 3 = \frac{1}{2} \quad | +3$$

$$7x = \frac{7}{2} \quad | :7$$

$$\underline{x = \frac{1}{2} = 0,5}$$