

rechnung_signalzeitverlauf_umkehrintegrator

Student Group

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Table of Contents

\$I.\quad\$ Am Punkt \$t_1\$

$$U_A(t_1) = -\frac{1}{\tau} \cdot \int_{t_0}^{t_1} U_E \, dt + U_A(t_0)$$

$$U_A(t_1) = -\frac{1}{5 \, \text{ms}} \cdot \int_0^{10 \, \text{ms}} 1 \, V \, dt + 0 \, \text{V}$$

$$U_A(t_1) = -\frac{1}{5 \, \text{ms}} \cdot 1 \, \text{V} \cdot \int_0^{10 \, \text{ms}} dt$$

$$U_A(t_1) = -\frac{1}{5 \, \text{ms}} \cdot 1 \, \text{V} \cdot [t]_0^{10 \, \text{ms}} = -2 \, \text{V}$$

\$I.\quad\$ Am Punkt \$t_2\$

$$U_A(t_1) = -\frac{1}{\tau} \cdot \int_{t_0}^{t_1} U_E \, dt + U_A(t_0)$$

$$U_A(t_1) = -\frac{1}{5 \, \text{ms}} \cdot \int_{10 \, \text{ms}}^{20 \, \text{ms}} (-1 \, \text{V}) \, dt + 0 \, \text{V} = 0 \, \text{V}$$

\$I.\quad\$ Am Punkt \$t_3\$

$$U_A(t_1) = -\frac{1}{\tau} \cdot \int_{t_0}^{t_1} U_E \, dt + U_A(t_0)$$

$$U_A(t_1) = -\frac{1}{5 \, \text{ms}} \cdot \int_{10 \, \text{ms}}^{20 \, \text{ms}} (-2 \, \text{V}) \, dt + 0 \, \text{V} = -2 \, \text{V}$$

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