

rechnung_signalzeitverlauf_umkehrintegrator

Student Group

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

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

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

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

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

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

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

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

\$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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Last update: 2021/05/09 09:53

