

rechnung_umkehrintegrator

Student Group

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$U_A = f(U_E)$	mit III.	
$U_A = \text{color}\{blue\}\{-U_D\} - U_C$	mit II. und I.	$\text{color}\{blue\}\{U_D\} = \{1 \over A_D\} \cdot U_A \overset{A_D \rightarrow \infty}{\longrightarrow} 0$
$U_A = \text{quad} \text{quad} 0 \text{quad} - \text{color}\{blue\}\{U_C\}$	mit V.	$\text{color}\{blue\}\{U_C\} = \{1 \over C\} \cdot (\int_{t_0}^{t_1} I_C \ dt + Q_0(t_0))$
$U_A = -\{1 \over C\} \cdot (\int_{t_0}^{t_1} \text{color}\{blue\}\{I_C\} \ dt + Q_0(t_0))$	mit IV.	$\text{color}\{blue\}\{I_C\} = I_R$
$U_A = \text{color}\{blue\}\{-\{1 \over C\} \cdot (\int_{t_0}^{t_1} I_R \ dt + Q_0(t_0))\}$	Ausklammern	
$U_A = -\{1 \over C\} \cdot (\int_{t_0}^{t_1} I_R \ dt - \text{color}\{blue\}\{Q_0(t_0) \over C\})$	Integrationskonstante betrachten	$\text{color}\{blue\}\{Q_0(t_0) \over C\} = U_C(t_0) = -U_{A0}$
$U_A = -\{1 \over C\} \cdot (\int_{t_0}^{t_1} \text{color}\{blue\}\{I_R\} \ dt + U_{A0})$	mit VI. und II.	$\text{color}\{blue\}\{I_R\} = \{U_R \over R\} = \{U_E \over R\}$
$U_A = -\{1 \over C\} \cdot (\int_{t_0}^{t_1} \text{color}\{blue\}\{1 \over R\} \cdot U_E \ dt + U_{A0})$	Konstante vorziehen	
$U_A = -\{1 \over R\} \cdot (\int_{t_0}^{t_1} U_E \ dt + U_{A0})$	Zeitkonstante $\tau = R \cdot C$ einfügen	
$U_A = -\{1 \over \tau\} \cdot (\int_{t_0}^{t_1} U_E \ dt + U_{A0})$		

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