

rechnung_umkehrintegrator

Student Group

First Name	Surname	Matrikel Nr.

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$U_A = f(U_E)$	with III.	
$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$
$U_A = \frac{1}{C} \int U_E dt + U_{A0}$	with II. and I.	$U_A = \frac{1}{C} \int U_E dt + U_{A0}$
$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$
$U_A = 0 \quad U_C = \frac{1}{C} \int U_E dt + U_{A0}$	with V.	$U_C = \frac{1}{C} \int U_E dt + U_{A0}$
$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = \frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$	with IV.	$U_C = U_R$
$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$	Factor out	
$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$	consider the integration constant	$U_{A0} = U_C(t_0) = -U_{A0}$
$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$	with VI. and II.	$U_R = U_E$
$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$	move constant ahead	
$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$	insert time constant $\tau = R \cdot C$	
$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$	$\frac{1}{C} \frac{dU_A}{dt} = -\frac{1}{C} \frac{dU_E}{dt}$
$U_A = -\frac{1}{C} \int U_E dt + U_{A0}$		
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