

calc_decimal_example

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$	$\$ \backslash \text{quad} \backslash \text{quad} \$$
value	2	6	5	8	4	7		
index	$\$ i \$$	3	2	1	0	-1	-2	
place value	$\$ B \wedge i \$$	$\$ \backslash \text{small} \{ 10 \wedge 3 \} \$$	$\$ \backslash \text{small} \{ 10 \wedge 2 \} \$$	$\$ \backslash \text{small} \{ 10 \wedge 1 \} \$$	$\$ \backslash \text{small} \{ 10 \wedge 0 \} \$$	$\$ \backslash \text{small} \{ 10 \wedge -1 \} \$$	$\$ \backslash \text{small} \{ 10 \wedge -2 \} \$$	
digit	$\$ z_i \$$	2	6	5	8	4	7	
calc.	$\$ z_i \backslash \text{cdot} B \wedge i \$$	2000	600	50	8	0.4	0.07	
Result	$\$ \backslash \text{sum}_i \{ z_i \backslash \text{cdot} B \wedge i \} \$$	2658,47						
aus (2+3)	$\$ \backslash \text{color} \{ \text{blue} \} \{ I_p \} = \backslash \text{color} \{ \text{blue} \} \{ I_m \} = 0 \$$		$\$ I_p \$ \text{ und } \$ I_m \$ \text{ sind damit definiert}$					
aus (6)	$\$ \backslash \text{color} \{ \text{blue} \} \{ I_o \} = I_1 \$$		$\$ I_o \$ \text{ ist damit bekannt, wenn } \$ I_1 \$ \text{ bekannt ist}$					
aus (7) und (3)	$\$ I_1 - I_2 - \backslash \text{color} \{ \text{blue} \} \{ 0 \} = 0 \$$		$\$ \backslash \text{quad} \$$					
	$\$ I_1 = I_2 = I_o \$$		$\$ \backslash \text{quad} \$$					
	$\$ \backslash \text{color} \{ \text{blue} \} \{ I_1 \} = \backslash \text{color} \{ \text{blue} \} \{ I_2 \} = \backslash \text{color} \{ \text{blue} \} \{ I_o \} \$$		$\$ \text{mit (8) und (9): } \$ I_{\text{boxed}} = \frac{\backslash \text{color} \{ \text{blue} \} \{ U_{\text{boxed}} \}}{\backslash \text{color} \{ \text{blue} \} \{ R_{\text{boxed}} \}} \$ \text{ und (5)}$					
	$\$ \backslash \text{frac} \{ U_1 \} \{ R_1 \} = \backslash \text{frac} \{ U_2 \} \{ R_2 \} = \backslash \text{frac} \{ U_A \} \{ R_1 + R_2 \} \$$		$\$ \text{Spannungsteilerformel, } \$ I = \text{const.} \$$					
(10)	$\$ U_2 = U_A \backslash \text{cdot} \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} \$$		$\$ \text{Spannungsteilerformel}$					

II. Betrachtung der Spannungsverstärkung

aus (0)	$\$ \backslash \text{color} \{ \text{blue} \} \{ A_V \} = \backslash \text{frac} \{ U_A \} \{ U_E \} \$$	$\$ \backslash \text{quad} \$$
	$\$ A_V = \backslash \text{frac} \{ U_A \} \{ \backslash \text{color} \{ \text{blue} \} \{ U_E \} \} \$$	$\$ \text{mit (4): } \$ U_E = U_2 + U_D \$$
	$\$ A_V = \backslash \text{frac} \{ U_A \} \{ \backslash \text{color} \{ \text{blue} \} \{ U_2 + U_D \} \} \$$	$\$ \backslash \text{quad} \$$
	$\$ A_V = \backslash \text{frac} \{ U_A \} \{ \backslash \text{color} \{ \text{blue} \} \{ U_2 \} + U_D \} \$$	$\$ \text{mit (10): } \$ U_2 = U_A \backslash \text{cdot} \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} \$$
	$\$ A_V = \backslash \text{frac} \{ U_A \} \{ \backslash \text{color} \{ \text{blue} \} \{ U_A \backslash \text{cdot} \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} + U_D \} \} \$$	$\$ \backslash \text{quad} \$$
	$\$ A_V = \backslash \text{frac} \{ U_A \} \{ U_A \backslash \text{cdot} \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} + \backslash \text{color} \{ \text{blue} \} \{ U_D \} \} \$$	$\$ \text{mit (1)}$
	$\$ A_V = \backslash \text{frac} \{ U_A \} \{ U_A \backslash \text{cdot} \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} + \backslash \text{frac} \{ U_A \} \{ A_D \} \} \$$	$\$ \backslash \text{quad} \$$
	$\$ A_V = \backslash \text{frac} \{ \backslash \text{color} \{ \text{blue} \} \{ U_A \} \} \{ \backslash \text{color} \{ \text{blue} \} \{ U_A \} \backslash \text{cdot} \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} + \backslash \text{frac} \{ \backslash \text{color} \{ \text{blue} \} \{ U_A \} \} \{ A_D \} \} \$$	$\$ \text{Erweitern mit } \$ \backslash \text{frac} \{ 1 \} \{ U_A \} \$$
	$\$ A_V = \backslash \text{frac} \{ 1 \} \{ \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} + \backslash \text{frac} \{ 1 \} \{ A_D \} \} \$$	$\$ \backslash \text{quad} \$$
	$\$ A_V = \backslash \text{frac} \{ 1 \} \{ \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} + \backslash \text{color} \{ \text{blue} \} \{ \backslash \text{frac} \{ 1 \} \{ A_D \} \} \} \$$	$\$ \text{mit } \$ \backslash \text{frac} \{ 1 \} \{ A_D \} \backslash \text{rightharpoonrightarrow} \{ A_D \} \text{rightharpoonrightarrow} \infty \$$
	$\$ A_V = \backslash \text{frac} \{ 1 \} \{ \backslash \text{frac} \{ R_2 \} \{ R_1 + R_2 \} \} \$$	$\$ \text{Bruch umformen}$
	$\$ A_V = \backslash \text{frac} \{ R_1 + R_2 \} \{ R_2 \} \$$	$\$ \backslash \text{quad} \$$

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