

University of Applied Sciences Cologne  Campus Gummersbach  Dipl.-Ing. (FH) Dipl.-Wirt. Ing. (FH) G. Danielak	<h1>Physik</h1>  <h2>Lösung Fehlerrechnung</h2>	<h1>Tutorium</h1>  <h2>L-FR-01</h2> Stand: 19.03.2006; R0
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$$a) \quad \frac{\Delta z}{z} = \frac{\Delta a}{a} + \frac{\Delta b}{b} + \frac{\Delta c}{c}$$

$$b) \quad \Delta z = \left( \frac{\Delta a}{a} + \frac{\Delta b}{b} \right) \cdot \frac{a}{b} + \Delta c$$

$$c) \quad \Delta z = \Delta a + \left( \frac{\Delta b}{b} + \frac{\Delta c}{c} \right) \cdot \frac{b}{c}$$

$$d) \quad \frac{\Delta z}{z} = \frac{\Delta a + \Delta b}{a + b} + \frac{\Delta c}{c}$$

$$e) \quad \Delta z = \left( \frac{\Delta a + \Delta b}{a - b} + \frac{\Delta c}{c} \right) \cdot \frac{a - b}{c} + \Delta d$$

$$f) \quad \Delta z = \left( \frac{\Delta a + \Delta b}{a + b} + \frac{\Delta c}{c} \right) \cdot \frac{a + b}{c} + \left( \frac{\Delta d}{d} + \frac{\Delta e}{e} \right) \cdot \frac{d}{e}$$

$$g) \quad \frac{\Delta z}{z} = \frac{\Delta a + \Delta b}{a + b} + \frac{\Delta c}{c} + \frac{\Delta d}{d} + \frac{\Delta e}{e}$$

$$h) \quad \frac{\Delta z}{z} = \frac{\Delta a}{a} + \frac{\Delta b}{b} + \frac{\Delta c}{c} + \frac{\Delta d}{d} + \frac{\Delta e + \Delta f}{e - f}$$

$$i) \quad \Delta z = \left( \frac{\Delta a + \Delta b}{a - b} + \frac{\Delta c + \Delta d}{c + d} + \frac{\Delta e}{e} \right) \cdot \frac{a - b}{c + d} \cdot e + \Delta f$$

$$j) \quad \Delta z = 2 \cdot \Delta a + \Delta b$$

$$k) \quad \Delta z = \Delta a + \left( \frac{\Delta b}{b} + 2 \cdot \frac{\Delta c}{c} \right) \cdot b \cdot c^2$$

$$l) \quad \frac{\Delta z}{z} = 2 \cdot \frac{\Delta a}{a} + \frac{\Delta b}{b} + \frac{\Delta c + \Delta d}{c - d}$$

$$m) \quad \frac{\Delta z}{z} = \frac{\Delta f}{f} \quad \text{oder} \quad \Delta z = 2 \cdot \pi \cdot \Delta f$$

$$n) \quad \frac{\Delta z}{z} = \frac{\Delta a}{a} + \frac{\Delta b}{b} + 2 \cdot \frac{\Delta c}{c}$$

$$o) \quad \frac{\Delta z}{z} = \frac{\Delta a}{a} + \frac{\Delta b}{b}$$

$$p) \quad \frac{\Delta z}{z} = \frac{2 \cdot \Delta a}{1 + 2 \cdot a}$$

$$q) \quad \frac{\Delta z}{z} = \frac{\left( \frac{\Delta a}{a} + \frac{\Delta b}{b} \right) \cdot \pi \cdot a \cdot b}{\varepsilon + \pi \cdot a \cdot b}$$