1-4

- $\frac{5}{6} + \frac{3}{10} = \frac{25}{30} + \frac{9}{30} = \frac{34}{30} = \frac{17}{15}$

$\frac{4}{15} - \frac{1}{6} = \frac{8}{30} - \frac{5}{30} = \frac{3}{30} = \frac{1}{10}$

$\frac{1}{7} : \frac{3}{2} = \frac{2}{14} : \frac{21}{14} = \frac{2}{21}$

$\frac{2 - \frac{1}{3}}{3\frac{1}{5} + 2} = \frac{6 - \frac{1}{3}}{3 - \frac{10}{5}} = \frac{5}{3} : \frac{-7}{5} = \frac{5}{3} \times \frac{-5}{7} \quad \frac{-5 \times 5 \times 3 \times 7}{21 \times 21}$

$= \frac{-525}{21 \times 21} = \frac{-25}{21}$

- 302,509
- $\frac{10^3 \cdot 10^5}{10^6} = \frac{10^8}{10^6} = 10^2 = 100$

$\frac{10^4}{10^2 \cdot 10^7} = 10^{4-9} = 10^{-5} = 0{,}00001$

$10^2 \cdot (10^2)^3 = 10^8$

$(10^4 \cdot 10^{-2})^3 = (10^2)^3 = 10^{2 \times 3} = 10^6$

- $\frac{5}{2} + \sqrt{\frac{9}{4}} = \frac{5}{2} + \frac{\sqrt{9}}{\sqrt{4}} = \frac{5}{2} + \frac{3}{2} = \frac{8}{2} = 4$

$\frac{3 + \sqrt{9 + 40}}{4} = \frac{3 + \sqrt{49}}{4} = \frac{10}{4} = \frac{5}{2}$

- $\sqrt{20} = \sqrt{4 \cdot 5} = \sqrt{4} \cdot \sqrt{5} = 2 \cdot \sqrt{5}$
- $\sqrt{a^2 - \left(\frac{a}{2}\right)^2} = \sqrt{a^2 - \frac{a^2}{2^2}} = a - \frac{a}{2} = \frac{a}{2}$

1-5

1-6 $f(x) = 3 \cdot (x-5)^2 - 1$

Kleinster Funktionswert: $x = 5$

$x < 5$: streng monoton fallend

$x > 5$: streng monoton steigend

1-7

- $\vec{a} = \begin{pmatrix} 4 \\ 3 \end{pmatrix} \Rightarrow |\vec{a}| = \sqrt{4^2 + 3^2} = \sqrt{16+9} = 5$