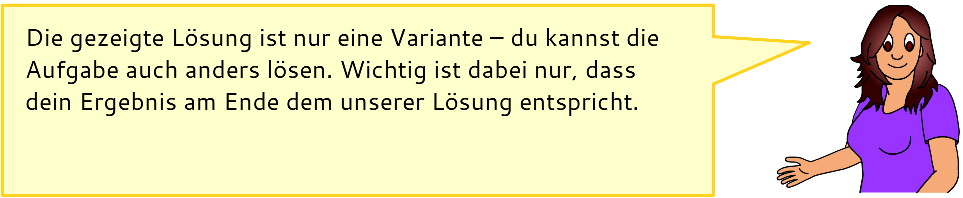

Bestimme die Definitionsmenge und anschließend die Lösungsmenge der Bruchgleichung.

1. Nenner:

$x = 0$

2. Nenner:

$4x - 6 = 0 \qquad | +6$

$4x \cancel{-6+6} = 0 + 6$

$4x = 6 \qquad | :4$

$4x : 4 = 6 : 4$

$x = \frac{6}{4} = \frac{3}{2}$

3. Nenner:

$2x - 3 = 0 \qquad | +3$

$2x \cancel{-3+3} = 0 + 3$

$2x = 3 \qquad | :2$

$2x : 2 = 3 : 2$

$x = \frac{3}{2}$

$\rightarrow \mathbb{D} = \mathbb{R} \setminus \{0; \frac{3}{2}\}$

1. Nenner: $2x = 2x$

2. Nenner: $4x - 6 = 2\,(2x - 3)$

3. Nenner: $2x - 3 = (2x - 3)$

→ Hauptnenner (HN): $2x\,(2x - 3)$

$\frac{1}{2x} + \frac{3}{4x-6} = \frac{x}{2x-3}$ $\quad | \cdot \text{HN} = 2x\,(2x-3)$

$\frac{1 \cdot 2x(2x-3)}{2x} + \frac{3 \cdot 2x(2x-3)}{2(2x-3)} = \frac{x \cdot 2x(2x-3)}{(2x-3)}$

$\frac{1 \cdot \cancel{2x}(2x-3)}{\cancel{2x}} + \frac{3 \cdot \cancel{2}x\cancel{(2x-3)}}{\cancel{2(2x-3)}} = \frac{x \cdot 2x\cancel{(2x-3)}}{\cancel{(2x-3)}}$

$1 \cdot 2x - 3 + 3 \cdot x = 2x \cdot x$

$2x - 3 + 3x = 2x^2$

$5x - 3 = 2x^2$ $\quad | -5x$

$\cancel{5x - 5x} - 3 = 2x^2 - 5x$

$-3 = 2x^2 - 5x$ $\quad | +3$

$\cancel{-3 + 3} = 2x^2 - 5x + 3$

$0 = 2x^2 - 5x + 3$ $\quad | : 2$

$0 : 2 = 2x^2 : 2 - 5x : 2 + 3 : 2$

$0 = x^2 - \frac{5x}{2} + \frac{3}{2}$

$x_{1|2} = -(-\frac{5}{4}) \pm \sqrt{(\frac{5}{4})^2 - \frac{3}{2}}$

$x_{1|2} = +(+\frac{5}{4}) \pm \sqrt{\frac{25}{16} - \frac{24}{16}}$

$x_{1|2} = \frac{5}{4} \pm \sqrt{\frac{1}{16}}$

$x_{1|2} = \frac{5}{4} \pm \frac{1}{4}$

$x_1 = \frac{5}{4} + \frac{1}{4}$

$x_1 = \frac{6}{4} = \frac{3}{2}$

$x_2 = \frac{5}{4} - \frac{1}{4}$

$x_2 = \frac{4}{4} = 1$

$\mathcal{L} = \{1\}$

($x_1 = \frac{3}{2}$ ist durch die Definitionsmenge nicht zugelassen)