

Bruchgleichungen

Bestimmen Sie die Definitions- und Lösungsmengen zu den angegebenen Bruchgleichungen.

Lösungen:

1.

$$\frac{1}{x} = 1 \quad \Rightarrow \quad \mathbb{D} = R \setminus \{0\}, \quad \mathbb{L} = \{1\}$$

2.

$$\frac{1}{2x} = 2 \quad \Rightarrow \quad \mathbb{D} = R \setminus \{0\}, \quad \mathbb{L} = \left\{ \frac{1}{4} \right\}$$

3.

$$\frac{1}{x} = \frac{3}{8} \quad \Rightarrow \quad \mathbb{D} = R \setminus \{0\}, \quad \mathbb{L} = \left\{ \frac{8}{3} \right\}$$

4.

$$\frac{4}{3x} = 7 \quad \Rightarrow \quad \mathbb{D} = R \setminus \{0\}, \quad \mathbb{L} = \left\{ \frac{4}{21} \right\}$$

5.

$$\frac{32}{15a} = \frac{16}{45} \quad \Rightarrow \quad \mathbb{D} = R \setminus \{0\}, \quad \mathbb{L} = \{6\}$$

6.

$$\frac{1}{2x-3} = 1 \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ \frac{3}{2} \right\}, \quad \mathbb{L} = \{2\}$$

7.

$$\frac{4}{5x-6} = 0 \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ \frac{6}{5} \right\}, \quad \mathbb{L} = \{ \}$$

8.

$$\frac{1}{x} = \frac{1}{2x-7} \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ 0; \frac{7}{2} \right\}, \quad \mathbb{L} = \{7\}$$

9.

$$\frac{38}{8x-11} = \frac{2}{x-11} \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ 11; \frac{11}{8} \right\}, \quad \mathbb{L} = \{18\}$$

10.

$$\frac{5x+6}{3x-8} = 1 \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ \frac{8}{3} \right\}, \quad \mathbb{L} = \{-7\}$$

11.

$$\frac{24x-1}{1-36x} = -\frac{3}{5} \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ \frac{1}{36} \right\}, \quad \mathbb{L} = \left\{ \frac{1}{6} \right\}$$

12.

$$\frac{x+2}{8x-8} = \frac{x-3}{8x-32} \quad \Rightarrow \quad \mathbb{D} = R \setminus \{1; 4\}, \quad \mathbb{L} = \left\{ \frac{11}{2} \right\}$$

13.

$$\frac{5-x}{x+5} = \frac{3-x}{x+3} \quad \Rightarrow \quad \mathbb{D} = R \setminus \{-5; -3\}, \quad \mathbb{L} = \{0\}$$

14.

$$\frac{7x+5}{15x-11} = \frac{7x-5}{15x-27} \quad \Rightarrow \quad \mathbb{D} = R \setminus \left\{ \frac{11}{15}; \frac{9}{5} \right\}, \quad \mathbb{L} = \{5\}$$

15.

$$\frac{2x+4}{x^2+2x} \cdot \frac{5x}{8-2x^2} = -1 \quad \Rightarrow \quad \mathbb{D} = R \setminus \{-2; 0; 2\}, \quad \mathbb{L} = \{-3; 3\}$$

16.

$$\left(\frac{x}{2} - \frac{2}{x} \right) \cdot \frac{x-2}{x+2} = \frac{x}{2} \left(\frac{4}{x} - \frac{12}{x^2} \right) \quad \Rightarrow \quad \mathbb{D} = R \setminus \{-2; 0\}, \quad \mathbb{L} = \{4\}$$

17.

$$\frac{\frac{x}{x+1}}{\frac{1}{x} - \frac{1}{x+1}} = \frac{\frac{x+1}{x}}{\frac{1}{x-1} - \frac{1}{x}} \quad \Rightarrow \quad \mathbb{D} = R \setminus \{-1; 0; 1\}, \quad \mathbb{L} = \{ \}$$

(1)