Mathematik

Übungen zu Bruchgleichungen

Bestimme die Definitions- und Lösungemengen der Bruchgleichungen.
Führe auch Proben durch.

a) $\dfrac{12}{x+4} = 1$

b) $\dfrac{15}{x-3} = 3$

c) $\dfrac{12}{x+1} + 2 = 4$

d) $\dfrac{5}{2x} + 1 = \dfrac{3}{x}$

e) $\dfrac{2}{3x} + \dfrac{1}{2x} + 1 = \dfrac{1}{6x}$

f) $\dfrac{4}{10x} + 1 = \dfrac{9}{10x} - \dfrac{1}{5x}$

g) $\dfrac{3}{x-3} = \dfrac{5}{x-5}$

h) $\dfrac{4}{x-2} = \dfrac{6}{x+1}$

i) $\dfrac{5}{x+2} = \dfrac{3}{x-2}$

j) $\dfrac{4x+7}{3x+4} = \dfrac{8x+11}{6x+6}$

k) $\dfrac{x+1}{x-1} = \dfrac{6x+11}{6x-3}$

l) $\dfrac{9x+44}{6x+4} - \dfrac{3x+2}{2x-5} = 0$

m) $\dfrac{14x-5}{2x-1} - \dfrac{4x+9}{6x-3} = 11$

n) $\dfrac{2x-3}{x-3} = 9 - \dfrac{5x-8}{3x-9}$

o) $8 - \dfrac{3x+7}{x+6} = \dfrac{5x+2}{x-2}$

p) $\dfrac{2}{x-5} + \dfrac{6}{(x-5)(x-6)} = \dfrac{3}{x-6}$

q) $\dfrac{30}{x^2-4} = \dfrac{7}{x-2} - \dfrac{5}{x+2}$

r) $\dfrac{35}{9x^2-16} + \dfrac{3}{3x+4} = \dfrac{14}{3x-4}$

s) $\dfrac{5-15x}{x^2-25} + \dfrac{2x-3}{x-5} = \dfrac{2x+1}{x+5}$

t) $\dfrac{3}{2x} + \dfrac{4}{x+3} = \dfrac{31}{2x^2+6x}$

u) $\dfrac{4x-1}{4} - \dfrac{3x+1}{3} = 1$

v) $\dfrac{2x+1}{3} - \dfrac{1}{6} = \dfrac{4x+1}{6}$

w) $3 - \dfrac{1}{x-2} = \dfrac{2x-5}{x-2}$

x)⁺ $\dfrac{4}{x-1} + \dfrac{1}{x-4} = \dfrac{3}{x-2} + \dfrac{2}{x-3}$

y)⁺ $\dfrac{4x+2}{3x-5} = \dfrac{4+5x}{4x-7}$

z)⁺ $\dfrac{16-x}{3,5} - \dfrac{6(6-x)}{x-6} = \dfrac{11x+2,5}{7}$

⁺ nur lösbar, wenn du mit quadratischen Gleichungen rechnen kannst!

Lösungen:

a)	D = R \ { -4 }	L = { 8 }
b)	D = R \ { 3 }	L = { 8 }
c)	D = R \ { -4 }	L = { 5 }
d)	D = R \ { 0 }	L = { 0,5 }
e)	D = R \ { 0 }	L = { -1 }
f)	D = R \ { 0 }	L = { 0,3 }
g)	D = R \ { 3 ; 5 }	L = { 0 }
h)	D = R \ { -1 ; 2 }	L = { 8 }
i)	D = R \ { -2 ; 2 }	L = { 8 }
j)	D = R \ { -4/3 ; -1 }	L = { 2 }
k)	D = R \ { -1/2 ; 1 }	L = { 4 }
l)	D = R \ { -2/3 ; 2,5 }	L = { 12 }
m)	D = R \ { 0,5 }	L = { 9/28 }
n)	D = R \ { 3 }	L = { 4 }
o)	D = R \ { -6 ; 2 }	L = { -94 }
p)	D = R \ { 5 ; 6 }	L = { 9 }
q)	D = R \ { 2 ; -2 }	L = { 3 }
r)	D = R \ { -4/3 ; 4/3 }	L = { -1 }
s)	D = R \ { 5 ; -5 }	L = { } *
t)	D = R \ { 0 ; -3 }	L = { 2 }
u)	D = R	L = { }
v)	D = R \ { 2 }	L = { } *
w)	D = R	L = R
x)	D = R \ { 1 ; 2 ; 3 ; 4 }	L = { 2,5 ; 5 }
y)	D = R \ { 5/3 ; 7/4 }	L = { 1 ; 6 }
z)	D = R \ { 6 }	L = { 5,5 } *

* Definitionsmenge beachten!