



Az algebrai törtek értelmezési tartománya és műveletek az algebrai törtekkel

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1. feladat

$$x = -3, \quad y = 5, \quad z = -0,5$$

a)

$$\frac{x+2}{x^2-4} = \frac{-3+2}{(-3)^2-4} = \frac{-1}{5} = -\frac{1}{5}$$

b)

$$\begin{aligned} \frac{2xy-4zy}{x^3y-4xyz^2} &= \\ &= \frac{2y \cdot (x-2z)}{xy \cdot (x-2z) \cdot (x+2z)} = \frac{2}{x \cdot (x+2z)} = \\ &= \frac{2}{(-3)(-3+2 \cdot (-0,5))} = \frac{2}{12} = \frac{1}{6} \end{aligned}$$

c)

$$\begin{aligned} \frac{x^2-x^4}{x^3-x} &= \\ &= \frac{x^2 \cdot (1-x^2)}{x \cdot (x^2-1)} = \frac{-x^2 \cdot (x^2-1)}{x \cdot (x^2-1)} = \frac{-x^2}{x} = -x = \\ &= -(-3) = 3 \end{aligned}$$



d)

$$\begin{aligned} \frac{2y+5}{x} - \frac{5}{x} &= \\ &= \frac{2y+5-5}{x} = \frac{2y}{x} = \\ &= \frac{2 \cdot 5}{-3} = \frac{10}{-3} = -\frac{10}{3} \end{aligned}$$

e)

$$\begin{aligned} \frac{xy}{x^2y+xy^2} \cdot \frac{x^2-xy}{x^2+xy} &= \\ &= \frac{xy}{xy \cdot (x+y)} \cdot \frac{x \cdot (x-y)}{x \cdot (x+y)} = \frac{x-y}{(x+y)^2} = \\ &= \frac{-3-5}{(-3+5)^2} = \frac{-8}{2^2} = \frac{-8}{4} = -\frac{8}{4} = -2 \end{aligned}$$

f)

$$\begin{aligned} \frac{16x^2z \cdot (z+1)}{8x \cdot (z^2+2z+1)} &= \\ &= \frac{16x^2z \cdot (z+1)}{8x \cdot (z+1)^2} = \frac{2xz}{z+1} = \\ &= \frac{2 \cdot (-3) \cdot (-0,5)}{-0,5+1} = \frac{3}{0,5} = 6 \end{aligned}$$

g)

$$\frac{z}{12} \cdot \frac{6}{z} = \frac{-0,5}{12} \cdot \frac{6}{-0,5} = \frac{-3}{-6} = \frac{1}{2}$$



h)

$$\begin{aligned} \frac{24y^3}{48y^2x} &= \\ &= \frac{y}{2x} = \\ &= \frac{5}{2 \cdot (-3)} = \frac{5}{-6} = -\frac{5}{6} \end{aligned}$$

i)

$$\begin{aligned} \frac{9x}{5} - \frac{12y}{3} &= \\ &= \frac{27x - 60y}{15} = \frac{9x - 20y}{5} = \\ &= \frac{9 \cdot (-3) - 20 \cdot 5}{5} = \frac{-127}{5} = -\frac{127}{5} \end{aligned}$$

j)

$$\begin{aligned} \frac{xy}{x^2y + xy^2} \cdot \frac{x^2 - xy}{x^2 + xy} &= \\ &= \frac{xy}{x^2y + xy^2} \cdot \frac{x^2 + xy}{x^2 - xy} = \frac{xy}{xy \cdot (x + y)} \cdot \frac{x \cdot (x + y)}{x \cdot (x - y)} = \\ &= \frac{1}{x - y} = \\ &= \frac{1}{-3 - 5} = \frac{1}{-8} = -\frac{1}{8} \end{aligned}$$