M9

Sčítání, odčítání a násobení mocnin

škola od 16.11. do 20.11.

St. uč. str. 86

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a) $\frac{x}{x+1} \cdot \left(\frac{x}{1} - \frac{1}{x}\right) = \frac{x}{x+1} \cdot \frac{x^2-1}{x} =$

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

$x \neq -1$
$x \neq 0$

b) $\frac{x}{1-x} \cdot \left(\frac{x}{1} - \frac{1}{x}\right) = \frac{x}{1-x} \cdot \frac{x^2-1}{x} =$

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

„součtář"

$x \neq 1$
$x \neq 0$

c) $\left(\frac{1}{1} - \frac{1}{x^2}\right) \cdot \left(\frac{x}{x+1} - \frac{x}{1}\right) = \frac{x^2-1}{x^2} \cdot \frac{x - x\cdot(x+1)}{x+1} =$

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

$x \neq 0$
$x \neq -1$

d) $\left(\frac{1}{1} - \frac{4}{x^2}\right) \cdot \left(\frac{2x}{x-2} + \frac{x}{1}\right) = \frac{x^2-4}{x^2} \cdot \frac{2x + x\cdot(x-2)}{x-2} =$

$= \frac{x^2-4}{x^2} \cdot \frac{2x + x^2 - 2x}{x-2} = \frac{(x+2)\cdot(x-2)}{x^2} \cdot \frac{x^2}{x-2} = x+2$

$x \neq 0$
$x \neq 2$

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a) $\left(1 + \frac{2}{z} + \frac{1}{z^2}\right) \cdot \frac{z}{z+1} = \frac{z^2+2z+1}{z^2} \cdot \frac{z}{z+1} =$

$\frac{(z+1)^{\cancel{2}}}{z^2} \cdot \frac{z}{\cancel{z+1}} = \frac{z+1}{z}$ $\quad z \neq 0,\ z \neq -1$

d) $\left(1 - \frac{6}{z} + \frac{9}{z^2}\right) \cdot \frac{3z^2}{3-z} = \frac{z^2-6z+9}{z^2} \cdot \frac{3z^2}{3-z} =$

$= \frac{(z-3)^{\cancel{2}}}{\cancel{z^2}} \cdot \frac{3\cancel{z^2}}{\cancel{-3+z}}$ „lovečák" $= -3 \cdot (z-3)$ $\quad z \neq 0,\ z \neq 3$

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b) $\frac{x}{y-x} \cdot \left(\frac{x}{1} - \frac{y^2}{x}\right) = \frac{x}{y-x} \cdot \frac{x^2-y^2}{x} = \frac{\cancel{x}}{\cancel{-y+x}} \cdot \frac{(x+y)\cdot(\cancel{x-y})}{\cancel{x}} =$

„lovečák"

$= -(x+y)$ $\quad x \neq y,\ x \neq 0$

c) $\left(\frac{xy}{x+y} - \frac{x}{1}\right) \cdot \frac{y+x}{x^2} = \frac{xy - x\cdot(x+y)}{x+y} \cdot \frac{y+x}{x^2} =$

$= \frac{xy - x^2 - xy}{\cancel{x+y}} \cdot \frac{\cancel{y+x}}{x^{\cancel{2}}} = -1$ $\quad x \neq -y,\ x \neq 0$