

Pracovní sešit algebry strana 44

1. Vynásob lomené výrazy a zapiš podmínky, za kterých můžeme násobení provést:

$$\text{a) } \frac{2}{x} \cdot \frac{7}{y} = \frac{14}{xy} \quad \begin{array}{l} x \neq 0 \\ y \neq 0 \end{array}$$

$$\text{b) } \frac{5a}{3b} \cdot \frac{2c}{3d} = \frac{10ac}{9bd} \quad \begin{array}{l} b \neq 0 \\ d \neq 0 \end{array}$$

$$\text{c) } \frac{\cancel{5m}}{\cancel{2}4k} \cdot \frac{\cancel{2}h}{15\cancel{m}} = \frac{h}{6k} \quad \begin{array}{l} k \neq 0 \\ m \neq 0 \end{array}$$

$$\text{d) } \frac{\cancel{4}z}{\cancel{3}u} \cdot \frac{\cancel{9}u^2}{4\cancel{16}z^2} = \frac{3u}{4z}$$

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2. Zjednoduš a запиš podmínky, za kterých můžeme násobení provést:

$$a) \left(\frac{c}{d^2}\right)^2 \cdot \left(\frac{d}{c^2}\right)^3 = \frac{c^2}{d^4} \cdot \frac{d^3}{c^6} = \frac{1}{dc^4} \quad d \neq 0, c \neq 0$$

$$b) \left(-\frac{k}{m}\right)^2 \cdot \left(\frac{m^2}{k}\right)^3 = \frac{k^2}{m^2} \cdot \frac{m^6}{k^3} = \frac{m^4}{k} \quad m \neq 0, k \neq 0$$

$$c) \left(-\frac{x^2y}{z}\right)^3 \cdot \left(\frac{z^2}{xy^2}\right)^2 = \frac{-x^6y^3}{z^3} \cdot \frac{z^4}{x^2y^4} = -\frac{x^4yz}{y^4} \quad x \neq 0, z \neq 0, y \neq 0$$

$$d) 15a^2b^3 \cdot \left(\frac{-2ab}{3a^2b}\right)^2 = \frac{15a^2b^3}{1} \cdot \frac{4a^2b^2}{9a^4b^2} = \frac{20b^3}{3} \quad a \neq 0, b \neq 0$$

3. Vynásob lomené výrazy:

$$a) \frac{2a}{a+b} \cdot \frac{4(a+b)}{3b} = \frac{8a}{3b} \quad a \neq -b, b \neq 0$$

$$b) \frac{3}{7(k+2m)} \cdot \frac{28(k+2m)}{3 \cdot 9(k+m)} = \frac{4}{3(k+m)} \quad k \neq -2m, k \neq -m$$

$$c) \frac{2c+3}{d} \cdot \frac{d^2}{3+2c} = d \quad c \neq -1.5, d \neq 0$$

$$d) \frac{2g-7f}{f-2g} \cdot (-2) = \frac{14f-4g}{f-2g} \quad f \neq 2g$$

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4. Vynásob lomené výrazy: $\wedge$

$$a) \frac{5x+10y}{15xy^2} \cdot \frac{6x^2y}{8y+4x} = \frac{\cancel{5}(x+2y) \cdot \cancel{6}^3 x^2 y}{3 \cdot \cancel{15}^3 x y^2 \cdot \cancel{4}^2 (2y+x)} = \frac{3x}{2y} \quad \begin{matrix} x \neq 0 \\ y \neq 0 \\ x \neq -2y \end{matrix}$$

$$b) \frac{9u^2v}{3u+3v} \cdot \frac{4u^2+4uv}{2uv^2} = \frac{9\cancel{u}^2 v}{3(u+v)} \cdot \frac{4u(u+\cancel{v})}{2uv^2} = \frac{6u^2}{v} \quad \begin{matrix} u \neq 0 \\ v \neq 0 \\ u \neq -v \end{matrix}$$

$$c) \frac{5r^2-5rs}{3rs^2} \cdot \frac{6r^2s}{(r+s)(r-s)} = \frac{5r(\cancel{r-s})}{3rs^2} \cdot \frac{6r^2\cancel{s}}{(r+s)(\cancel{r-s})} = \frac{10r^2}{s(r+s)} = \frac{10r^2}{rs+s^2} \quad \begin{matrix} r \neq 0 \\ s \neq 0 \\ r \neq \pm s \end{matrix}$$

$$d) \frac{2m-3}{m+1} \cdot \frac{3mn+3n}{3-2m} = \frac{2m-3}{m+1} \cdot \frac{3m(\cancel{m+1})}{-1 \cdot (2m-3)} = -3m \quad \begin{matrix} m \neq -1 \\ m \neq 1,5 \end{matrix}$$