SLOŽENÉ LOMENÉ VÝRAZY   (M-09-09)

Vypočítej a urči, kdy má výraz smysl.

1)
$$\frac{\dfrac{2a^2+8a+8}{a^2-4}:\dfrac{6a-12}{(a-2)^2}}{\dfrac{2-a}{(a-2)^2}:\dfrac{3a-6}{a+2}} = \frac{\dfrac{2(a+2)^2}{(a-2).(a+2)}:\dfrac{6(a-2)}{(a-2).(a-2)}}{\dfrac{-1(a-2)}{(a-2).(a-2)}:\dfrac{3(a-2)}{a+2}} = \frac{\dfrac{2(a+2)}{a-2}.\dfrac{(a-2).(a-2)}{6(a-2)}}{\dfrac{-1}{a-2}.\dfrac{a+2}{3(a-2)}} =$$

$$= \frac{\dfrac{a+2}{3(a-2)}}{\dfrac{-1(a+2)}{3.(a-2)^2}} = \frac{a+2}{3(a-2)}:\frac{-1(a+2)}{3.(a-2)^2} = \frac{a+2}{3(a-2)}.\frac{3(a-2).(a-2)}{-1(a-2)^2} = -\frac{a^2-4}{(a-2)^3}\quad \mathbf{a \neq \pm 2}$$

2)
$$\frac{\dfrac{x^2}{y^2-x^2}+1}{1-\dfrac{x}{x-y}} = \frac{\dfrac{x^2}{y^2-x^2}+\dfrac{y^2-x^2}{y^2-x^2}}{\dfrac{x-y}{x-y}-\dfrac{x}{x-y}} = \frac{\dfrac{x^2+y^2-x^2}{y^2-x^2}}{\dfrac{x-y-x}{x-y}} = \frac{y^2}{y^2-x^2}:\frac{-y}{x-y} =$$

$$= \frac{y^2}{(y-x).(y+x)} \cdot \frac{-1(y-x)}{-y} = \frac{y}{y+x} \qquad \mathbf{y \neq \pm x}$$

3)
$$\frac{\dfrac{a^2b+ab^2}{ab-b^2}:\dfrac{a^2-b^2}{a-b}}{\dfrac{a^2-b^2}{a^2-ab}:\dfrac{(a-b)^2}{a+b}} = \frac{\dfrac{ab(a+b)}{b(a-b)}.\dfrac{a-b}{(a-b).(a+b)}}{\dfrac{(a+b).(a-b)}{a(a-b)}.\dfrac{a+b}{(a-b).(a-b)}} = \frac{\dfrac{a}{(a-b)^2}}{\dfrac{(a+b)^2}{a(a-b)^2}} = \frac{a}{(a-b)^2}:\frac{(a+b)^2}{a(a-b)^2} =$$

$$= \frac{a}{(a-b)^2}.\frac{a(a-b)^2}{(a+b)^2} = \frac{a^2}{(a-b)^2.(a+b)^2} \qquad \mathbf{a \neq \pm b}$$