

## Repetitorium matematiky

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$(a+b)(a-b) = a^2 - b^2$$

### Test repetitorium

#### 0.0.1 Upravte do základního tvaru

$$\left(\frac{-16}{3}\right) \cdot \sqrt{\frac{2}{3}} + \frac{\frac{64}{3}}{2 \cdot \sqrt{\frac{2}{3}}}$$

#### Zjednodušte

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

#### Hodina 07.10.2022

$$\begin{aligned} & \left(\frac{1}{x+1} - \frac{2x}{x^2-1}\right) \left(\frac{1}{x} - 1\right) = \left(\frac{1}{x+1} - \frac{2x}{(x+1)(x-1)}\right) \left(\frac{1}{x} - 1\right) = \\ & = \left(\frac{1}{x+1} \cdot \frac{x-1}{x-1} - \frac{2x}{(x+1)(x-1)}\right) \left(\frac{1}{x} - 1\right) = \left(\frac{x-1}{(x+1)(x-1)} - \frac{2x}{(x+1)(x-1)}\right) \left(\frac{1}{x} - 1\right) = \\ & = \left(\frac{-x-1}{(x+1)(x-1)}\right) \left(\frac{1}{x} - \frac{x}{x}\right) = \frac{-x-1}{(x+1)(x-1)} \cdot \frac{1-x}{x} = \frac{-(x+1)}{(x+1)(x-1)} \cdot \frac{1-x}{x} = \\ & = \frac{-1}{x-1} \cdot \frac{1-x}{x} = \frac{-(1-x)}{(x-1)(x)} = \frac{-(-1)(x-1)}{(x-1)x} = \frac{1}{x} \end{aligned}$$

$$\begin{aligned} & \left(\frac{3}{(x-3)^2} + \frac{1}{x+3} - \frac{6}{x^2-9}\right) \cdot \frac{x^2-6x+9}{2} = \left(\frac{3}{(x-3)(x-3)} + \frac{1}{x+3} - \frac{6}{(x+3)(x-3)}\right) \cdot \frac{(x-3)(x-3)}{2} = \\ & = \left(\frac{3}{(x-3)(x-3)} + \frac{x-3}{(x+3)(x-3)} - \frac{6}{(x+3)(x-3)}\right) \cdot \frac{(x-3)(x-3)}{2} = \\ & = \left(\frac{3}{(x-3)(x-3)} + \frac{x-9}{(x+3)(x-3)}\right) \cdot \frac{(x-3)(x-3)}{2} = \\ & = \left(\frac{3}{(x-3)(x-3)} + \frac{x-9}{(x+3)(x-3)} \cdot \frac{(x-3)}{(x-3)}\right) \cdot \frac{(x-3)(x-3)}{2} = \\ & = \left(\frac{3}{(x-3)^2} + \frac{(x-9)(x-3)}{(x+3)(x-3)^2}\right) \cdot \frac{(x-3)^2}{2} = \frac{3x+9 + ((x-9)(x-3))}{(x+3)(x-3)^2} \cdot \frac{(x-3)^2}{2} = \\ & = \frac{3x+9 + ((x-9)(x-3))}{2(x+3)} = \frac{3x+9 + (x^2-3x-9x+27)}{2(x+3)} = \\ & = \frac{x^2-9x+36}{2(x+3)} \end{aligned}$$

$$\frac{x^2+7x}{9-x^2} : \frac{x^2-49}{x+3} = \frac{x(x+7)}{(x+3)(-x+3)} \cdot \frac{x+3}{(x+7)(x-7)} = \frac{x}{\underline{\underline{(x-7)(3-x)}}}$$