

Vzorové řešení 1. pí's. práce

$$1. \lim_{x \rightarrow 3} \frac{\sqrt{x+13} - 2\sqrt{x+1}}{x^2 - 9} \stackrel{\text{prosteuc.}}{=} \lim_{x \rightarrow 3} \frac{\sqrt{x+13} - 2\sqrt{x+1}}{x^2 - 9} \cdot \frac{\sqrt{x+13} + 2\sqrt{x+1}}{\sqrt{x+13} + 2\sqrt{x+1}} =$$

$$= \lim_{x \rightarrow 3} \frac{x+13 - 4x - 4}{(x^2 - 9)A} = \lim_{x \rightarrow 3} \frac{-3(x-3)}{(x-3)(x+3)A} \stackrel{\text{prosteuc. } A}{=} \lim_{x \rightarrow 3} \frac{-3}{(x+3)A}$$

$$\frac{-3}{6(4+4)} = \underline{\underline{-\frac{1}{16}}}$$

↑ VoAL & spoj. uv. fu

$$2. \lim_{x \rightarrow 0} \left(\frac{x}{\sin x} \right) \Rightarrow e^{\lim_{x \rightarrow 0} \left[\ln \left(\frac{x}{\sin x} \right) \right]} \frac{\sin x}{x - \sin x}$$

$$\lim_{x \rightarrow 0} \frac{\sin x}{x - \sin x} \ln \left(\frac{x}{\sin x} - 1 + 1 \right) = \lim_{x \rightarrow 0} \frac{\sin x}{x - \sin x} \frac{\ln \left(\frac{x}{\sin x} \right)}{\left(\frac{x}{\sin x} - 1 \right)}$$

$$\cdot \left(\frac{x}{\sin x} - 1 \right) \stackrel{\text{VOLSE, } y = \frac{x}{\sin x}}{=} \lim_{x \rightarrow 0} \frac{\sin x}{x - \sin x} \cdot \frac{x - \sin x}{\sin x} = 1$$

$$\text{Výsledek } \lim_{x \rightarrow 0} \left(\frac{x}{\sin x} \right)^{\frac{\sin x}{x - \sin x}} = e^1 = \underline{\underline{e}}$$