

41) LIMITA FUNKCE, PODTÁVNI S LIMITAMI
OKOLI BODU, DEFINICE LIMITY

Vypočítejte uvedené limity:

① $\lim_{x \rightarrow 0} (\sin x + \cos x)$ | 1

② $\lim_{x \rightarrow \frac{\pi}{3}} \frac{\sin x}{\cos 2x}$ | $-\sqrt{3}$

③ $\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x^2 + 2x - 8}$ | $-\frac{1}{6}$

④ $\lim_{x \rightarrow 0} \frac{x}{\sqrt{x+1} - 1}$ | 2

⑤ $\lim_{x \rightarrow 0} \frac{\sqrt{x+4} - 2}{2x}$ | $\frac{1}{8}$

⑥ $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\sin x - \cos x}{\cos 2x}$ | $-\frac{\sqrt{2}}{2}$

⑦ $\lim_{x \rightarrow 0} \frac{\sin x}{3x}$ | $\frac{1}{3}$

⑧ $\lim_{x \rightarrow 0} \left(\frac{3}{x^2+1} + \frac{x}{\sin 4x} \right)$ | $\frac{13}{4}$

⑨ $\lim_{x \rightarrow 0} \frac{\sin^2 x}{\sqrt{1+\cos x} - \sqrt{2}}$ | $-4\sqrt{2}$

⑩ $\lim_{x \rightarrow 1} \frac{x^3 - 1}{x^2 + 2x - 3}$ | $\frac{2}{3}$

⑪ $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\cos 2x - \sin 2x + 1}{\cos x - \sin x}$ | $\sqrt{2}$

⑫ $\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{\sqrt{x+9} - 3}$ | +3

⑬ $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\sin x - \cos x}{\tan^2 x - 1}$ | $\frac{\sqrt{2}}{3}$

⑭ $\lim_{x \rightarrow 0} \frac{e^{x^2} - 1}{e^x - e^{-x}}$ | 0

⑮ $\lim_{x \rightarrow 1} \frac{\ln x - \ln^2 x}{x - x^2}$ | -1

$$(16) \lim_{x \rightarrow 0} x - 2 - 4 \ln x \quad | +\infty$$

$$(17) \lim_{x \rightarrow 0} \frac{2x-1}{x^2} \quad | -\infty$$

$$(18) \lim_{x \rightarrow 0} \frac{x + \ln x}{x^2} \quad | -\infty$$

$$(19) \lim_{x \rightarrow +\infty} \frac{x + \ln x}{x^2} \quad | 0$$

$$(20) \lim_{x \rightarrow -\infty} 1 - (x^2 - 2x + 2)e^{-x} \quad | -\infty$$

$$(21) \lim_{x \rightarrow +\infty} \frac{x-1}{x^2} \quad | 0$$

$$(22) \lim_{x \rightarrow +\infty} \frac{x+1}{x-1} \quad | 1$$

$$(23) \lim_{x \rightarrow +\infty} \frac{\sqrt{x+3} - 2}{x-1} \quad | 0$$

$$(24) \lim_{x \rightarrow +\infty} \frac{\sqrt{x^2-1} + \sqrt{x^2+1}}{x} \quad | 2$$

$$(25) \lim_{x \rightarrow -\infty} \frac{\sqrt{x^2-1} + \sqrt{x^2+1}}{x} \quad | -2$$

$$(26) \lim_{x \rightarrow +\infty} (1 + x - 2x^2 \ln x) \quad | -\infty$$

$$(27) \lim_{x \rightarrow -\infty} (e^{2x} + 2x + 1) \quad | -\infty$$

$$(28) \lim_{x \rightarrow +\infty} \frac{x^2 + |x|}{x^2 - |x|} \quad | 1$$

$$(29) \lim_{x \rightarrow -\infty} \frac{x^2 + |x|}{x^2 - |x|} \quad | 1$$