

# Limity funkcí

## Limity ve vlastním bodě

- |    |                                                           |     |                                                                                              |
|----|-----------------------------------------------------------|-----|----------------------------------------------------------------------------------------------|
| 1) | $\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x^2 - x - 2}$ | 6)  | $\lim_{x \rightarrow 5} \frac{x^2 - 25}{x - 5}$                                              |
| 2) | $\lim_{x \rightarrow 2} \frac{3x^2 - 12}{x^3 - x^2 - 2x}$ | 7)  | $\lim_{x \rightarrow 2} \frac{x^3 - 8}{x - 2}$                                               |
| 3) | $\lim_{x \rightarrow 4} \frac{\sqrt{x+5} - 3}{x - 4}$     | 8)  | $\lim_{x \rightarrow 2} \frac{x^4 - 16}{x - 2}$                                              |
| 4) | $\lim_{x \rightarrow 1} \frac{\sqrt{x+3} - 2}{x^2 - 1}$   | 9)  | $\lim_{x \rightarrow 1} \frac{x^8 - 1}{x - 1}$                                               |
| 5) | $\lim_{x \rightarrow 100} \frac{\sqrt{x} - 10}{x - 100}$  | 10) | $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin^2 x - 4 \sin x + 3}{\sin^2 x - 5 \sin x + 4}$ |

## Limity v nevlastním bodě

- |    |                                                                                                                                                                     |     |                                                                                                                              |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------|
| 1) | $\lim_{x \rightarrow \infty} \frac{3x^2 + 2x^3 + 3}{2x^2 + 3x^3 + 2}$                                                                                               | 8)  | $\lim_{x \rightarrow \infty} 2^{\frac{27x+1}{9x+1}}$                                                                         |
| 2) | $\lim_{x \rightarrow \infty} \frac{2x + 3^{x+2}}{2x + 3^{x-1}}$                                                                                                     | 9)  | $\lim_{x \rightarrow \infty} \log_2 \left( \frac{8x^2 + 10x + 1}{16x^2 + 11x + 7} \right)$                                   |
| 3) | $\lim_{x \rightarrow \infty} \frac{2^{x+3} + 3^{x+2} + 4^{x+1}}{2^{x-3} + 3^{x-2} + 4^{x-1}}$                                                                       | 10) | $\lim_{x \rightarrow \infty} \log_{\frac{1}{3}} \left( \frac{16x + 1}{2x + 7} + \cos \left( \frac{1}{x} \right) \right)$     |
| 4) | $\lim_{x \rightarrow \infty} \frac{3^x - 3^{x-1} + 3^{x-2}}{2^x + 3^x + 3^{x-1} - 3^{x-2}}$                                                                         | 11) | $\lim_{x \rightarrow \infty} \left( 2 \log_5 \left( \frac{5x + 3}{25x + 1} \right) + 3 \sqrt{\frac{8x + 9}{2x + 1}} \right)$ |
| 5) | $\lim_{x \rightarrow \infty} \frac{2^{2x+1} + 3^x + \sqrt{2^{4x+1}}}{2^{x+1} + 3^{x+1} + 4^{x+1}}$                                                                  | 12) | $\lim_{x \rightarrow \infty} \sqrt{\frac{8 \sqrt[3]{x} + 2 \sqrt[4]{x}}{2 \sqrt[3]{x} + 8 \sqrt[4]{x}}}$                     |
| 6) | $\lim_{x \rightarrow \infty} \frac{3^{2x+1} + 4^x + 5^{x+3}}{3^{2x-1} + 4^{\frac{3}{2}x} + 5^{x+9}}$                                                                | 13) | $\lim_{x \rightarrow \infty} (\sqrt{x^2 + 3x} - x)$                                                                          |
| 7) | $\lim_{x \rightarrow \infty} \frac{\left(\frac{7}{12}\right)^x + \left(\frac{11}{15}\right)^{x-1}}{\left(\frac{11}{15}\right)^x + \left(\frac{7}{12}\right)^{x-1}}$ | 14) | $\lim_{x \rightarrow \infty} (\sqrt{x^2 + 7x} - \sqrt{x^2 + 5x})$                                                            |

Výsledky:

**Limity ve vlastním bodě**

- |                   |                   |
|-------------------|-------------------|
| 1) $-\frac{1}{3}$ | 6) 10             |
| 2) 2              | 7) 12             |
| 3) $\frac{1}{6}$  | 8) 32             |
| 4) $\frac{1}{8}$  | 9) 8              |
| 5) $\frac{1}{20}$ | 10) $\frac{2}{3}$ |

**Limity v nevlastním bodě**

- |                           |                   |
|---------------------------|-------------------|
| 1) $\frac{2}{3}$          | 8) 8              |
| 2) 27                     | 9) $-1$           |
| 3) 16                     | 10) $-2$          |
| 4) $\frac{7}{11}$         | 11) 4             |
| 5) $\frac{2+\sqrt{2}}{4}$ | 12) 2             |
| 6) 9                      | 13) $\frac{3}{2}$ |
| 7) $\frac{15}{11}$        | 14) 1             |