

Limit of a function

Evaluate the following limits:

$$1. \lim_{x \rightarrow 2} \frac{x^2 - 4}{x^2 - 3x + 2} \quad (4)$$

$$2. \lim_{x \rightarrow 1} \frac{x^2 - 4}{x^2 - 3x + 2} \quad (\text{neexistuje})$$

$$3. \lim_{x \rightarrow 0} \frac{\sqrt{x+2} - \sqrt{2}}{x} \quad \left(\frac{\sqrt{2}}{4} \right)$$

$$4. \lim_{x \rightarrow -2} \frac{\sqrt{x+6} - 2}{x+2} \quad \left(\frac{1}{4} \right)$$

$$5. \lim_{x \rightarrow \frac{\pi}{2}^+} \operatorname{tg} x \quad (-\infty)$$

$$6. \lim_{x \rightarrow 1^+} 2^{\frac{1}{1-x}} \quad (0)$$

$$7. \lim_{x \rightarrow 1^-} 2^{\frac{1}{1-x}} \quad (\infty)$$

$$8. \lim_{x \rightarrow \infty} \frac{x^2 - 4}{x^2 - 3x + 2} \quad (1)$$

$$9. \lim_{x \rightarrow -\infty} \frac{7x^2 - 4}{3x - x^2} \quad (-7)$$

$$10. \lim_{x \rightarrow \infty} \frac{x^3 - 1}{x^4 + x + 2} \quad (0)$$

$$11. \lim_{x \rightarrow \infty} \frac{x^3 + 2x - 3}{x + 2} \quad (\infty)$$

$$12. \lim_{x \rightarrow -\infty} (-2x^3 + 2x - 4) \quad (\infty)$$

$$13. \lim_{x \rightarrow \infty} \left(\frac{3x^2 - 4}{x^2 - 3x + 2} \right)^2 \quad (9)$$

$$14. \lim_{x \rightarrow \infty} (\sqrt{x-2} - \sqrt{x}) \quad (0)$$

$$15. \lim_{x \rightarrow \infty} \frac{\sqrt{2x^2 + 1}}{x} \quad (\sqrt{2})$$

$$16. \lim_{x \rightarrow -\infty} \frac{\sqrt{2x^2 + 1}}{x} \quad (-\sqrt{2})$$

$$17. \lim_{x \rightarrow \infty} \frac{\operatorname{arctg} x}{x} \quad (0)$$

$$18. \lim_{x \rightarrow -\infty} (x \cdot \operatorname{arccot} x) \quad (-\infty)$$

$$19. \lim_{x \rightarrow \infty} \left(\frac{x+2}{x+1} \right)^x \quad (e)$$

$$20. \lim_{x \rightarrow \infty} \left(\frac{x}{x+1} \right)^{2x} \quad (e^{-2})$$