

Limity funkcí, týden 1 (20.2.2024)

Spočtete limity.

$$1. \lim_{x \rightarrow 0} \frac{\sin 5x - \sin 3x}{\sin x}.$$

$$2. \lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2}.$$

$$3. \lim_{x \rightarrow 0} \frac{1 + \sin x - \cos x}{1 - \sin x - \cos x}.$$

$$4. \lim_{x \rightarrow 0} \frac{\tan x}{x} = 1$$

$$5. \lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2}$$

$$6. \lim_{x \rightarrow 0} \frac{\arcsin x}{x}$$

$$7. \lim_{x \rightarrow 0} \frac{\arctan x}{x}$$

$$8. \lim_{x \rightarrow 0} \frac{\sin(\sin x) - x}{x^3}$$

$$9. \lim_{x \rightarrow 0} \frac{\cos(x) - 1 + \frac{x^2}{2}}{x^4}$$

$$10. \lim_{n \rightarrow \infty} n^4 \left(\cos\left(\frac{1}{n}\right) - \exp\left(\frac{-1}{2n^2}\right) \right)$$

$$11. \lim_{x \rightarrow 0} \frac{e^x \sin x - x(1+x)}{x^3}$$

$$12. \lim_{x \rightarrow 0} \frac{\sin(e^{x^2} - 1) - 1 + \cos(\sqrt{2}x)}{x^4}$$

$$13. \lim_{x \rightarrow 0} \frac{(1 + \sin x)^x - \exp(x^2) + \frac{x^3}{2}}{x^4}$$

$$14. \lim_{n \rightarrow \infty} \sqrt[6]{n^5} \left(\sin\left(\frac{1}{\sqrt{n}}\right) - \frac{1}{\sqrt[6]{n}} \log\left(1 + \frac{1}{\sqrt[3]{n}}\right) \right)$$

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