

Пресметнете границите:

$$1. \lim_{n \rightarrow \infty} \frac{3n+1}{5n-1}$$

$$2. \lim_{n \rightarrow \infty} \left(\frac{1+2+\dots+n}{n+3} - \frac{n}{2} \right)$$

$$3. \lim_{x \rightarrow 0} \frac{2x - 3x^2 + x^3}{5x^2 - x^3}$$

$$4. \lim_{x \rightarrow 2} \frac{x^2 + x - 2}{x^2 + 2x}$$

$$5. \lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{\pi - 2x}$$

$$6. \lim_{x \rightarrow 0} \frac{\sin^2 x}{\sqrt{1+x \sin x} - \cos x}$$

$$7. \lim_{x \rightarrow 0} \frac{1 - \cos 2x}{x \sin x}$$

$$8. \lim_{x \rightarrow \frac{\pi}{4}} \left(\frac{\sin x}{\cos x} - \operatorname{tg}^2 x \right)$$

$$9. \lim_{x \rightarrow \infty} \left(\frac{x+1}{x} \right)^x$$

$$10. \lim_{x \rightarrow 0} \left(\frac{x+1}{x} \right)^x$$

$$11. \lim_{x \rightarrow \infty} \left(\frac{2x+1}{2x-1} \right)^x$$

$$12. \lim_{x \rightarrow 0} \frac{\operatorname{tg} 3x}{\sin 5x}$$

$$13. \lim_{x \rightarrow \infty} \left(\sqrt{x^2 + x + 1} - \sqrt{x^2 - x} \right)$$

$$14. \lim_{x \rightarrow \frac{\pi}{4}} \frac{\cos 2x}{-\sin x + \cos x}$$

$$15. \lim_{x \rightarrow 0} x \ln x$$

$$16. \lim_{x \rightarrow 0} (\sin^{-1} x - x^{-2})$$

$$17. \lim_{x \rightarrow \frac{\pi}{2}} \frac{\operatorname{tg} x}{\operatorname{tg} 3x}$$