

Les limites 1 bac

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On note : $x^{\frac{1}{n}} = \sqrt[n]{x}$

Calculer les limites suivantes :

$$1. \lim_{x \rightarrow 0} \frac{\sqrt{1+x} - \sqrt{1-x}}{x}$$

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

$$3. \lim_{x \rightarrow 1} \frac{\sqrt{x} - 1}{x - 1}$$

$$4. \lim_{x \rightarrow +\infty} \frac{x^3 + x + 5}{5x^3 + 7x^2 + 8}$$

$$5. \lim_{x \rightarrow +\infty} (\sqrt{x^2 + 2x} - x)$$

$$6. \lim_{x \rightarrow +\infty} \frac{x + \cos x}{x + \sin x}$$

$$7. \lim_{x \rightarrow +\infty} \frac{4 \sin^2 x + 3 \cos(5x)}{x}$$

$$8. \lim_{x \rightarrow 0} \frac{\sqrt{1+x} - \left(1 + \frac{x}{2}\right)}{x^2}$$

$$9. \lim_{x \rightarrow 0} \frac{\sqrt{2x^2 + 5x + 9} - 3}{x}$$

$$10. \lim_{x \rightarrow +\infty} (\sqrt{x} + \sqrt[4]{x} - \sqrt{x})$$

$$11. \lim_{x \rightarrow +\infty} \frac{\sqrt{x} + \sqrt[4]{x} + \sqrt[8]{x}}{\sqrt{x} + 1}$$

$$12. \lim_{x \rightarrow 0} x \sin \left(\frac{1}{x} \right)$$

$$13. \lim_{x \rightarrow 0} \frac{\cos x - \sqrt{1 + \frac{\sin x}{2}}}{x}$$

$$14. \lim_{x \rightarrow 0} \frac{4x - \sin 2x}{x + \tan 3x}$$

$$15. \lim_{x \rightarrow 0} \frac{1 + \sin x}{1 - \cos x}$$

$$16. \lim_{x \rightarrow 0} \frac{\cos ax - \cos bx}{x^2}$$

$$17. \lim_{x \rightarrow 1} \frac{x^n - 1}{x - 1}; n \in \mathbb{N}$$

$$18. \lim_{x \rightarrow 0} x E \left(\frac{1}{x} \right)$$

$$19. \lim_{x \rightarrow +\infty} x E \left(\frac{1}{x} \right)$$

$$20. \lim_{x \rightarrow 0^+} E \left(\frac{1}{x} \right)$$