

Spočtete limitu.

1.

$$\lim_{x \rightarrow 2} \frac{x^3 + 2x^2 - 4x - 8}{x^2 - 5x + 6}$$

2.

$$\lim_{x \rightarrow \infty} \left(\sqrt{x^2 + 7x - 3} - \sqrt{x^2 + 7x + 3} \right)$$

3.

$$\lim_{x \rightarrow -1} \frac{x^3 + 3x^2 + 4x + 2}{x^2 + 2x + 1}$$

4.

$$\lim_{x \rightarrow 0} \frac{x^2}{1 - \cos\left(\frac{x}{2}\right)}$$

5.

$$\lim_{x \rightarrow -2} \frac{x^3 + 2x^2 + 4x + 8}{x^2 + 3x + 2}$$

6.

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

7.

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

8.

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

9.

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{1 + \cos 2x}$$

10.

$$\lim_{x \rightarrow -\infty} \frac{x^4 - 2x^2 + 1}{x^3 + x^2 + x + 1}$$

11.

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

12.

$$\lim_{x \rightarrow 1} \frac{1 + x - 2x^2}{1 - x^2}$$

13.

$$\lim_{x \rightarrow 0} \frac{\sqrt{4-3x} - 2}{x}$$

14.

$$\lim_{x \rightarrow 1} \frac{1 + 2x - 3x^2}{1 - x^3}$$

15.

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

16.

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

17.

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

18.

$$\lim_{x \rightarrow 0} \frac{\sqrt{3x^2 + 2x + 1} - 1}{x}$$

19.

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

20.

$$\lim_{x \rightarrow \pi} \frac{\sin 2x}{\cos \frac{x}{2}}$$

21.

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

22.

$$\lim_{x \rightarrow \infty} \sqrt{x^2 + x} - \sqrt{x^2 - x}$$

23.

$$\lim_{x \rightarrow \infty} \sqrt{x} \left(\sqrt{x-3} - \sqrt{x+3} \right)$$

24.

$$\lim_{x \rightarrow 1} \frac{x^4 - 2x^2 + 1}{x^3 - x^2 + x - 1}$$

25.

$$\lim_{x \rightarrow 1} \frac{x^4 - 2x^2 + 1}{x^3 - x^2 - x + 1}$$

26.

$$\lim_{x \rightarrow 0^-} \frac{1 - \sqrt{2 + 3x + 4x^2}}{5x}$$

27.

$$\lim_{x \rightarrow 0} (1 - 2x)^{\frac{3-x}{4x}}$$

28.

$$\lim_{x \rightarrow 0^+} \frac{x^2}{\sin \sqrt{x}}$$

29.

$$\lim_{x \rightarrow -\infty} \frac{x^4 - 2x^2 + 1}{x^2 + 2x + 1}$$

30.

$$\lim_{x \rightarrow 0} \frac{3 - \sqrt{9 - 3x}}{6x}$$

31.

$$\lim_{x \rightarrow -\infty} \frac{x^4 - 2x^2 + 1}{x^3 + x^2 + x + 1}$$

32.

$$\lim_{x \rightarrow \infty} \left(\sqrt{x^2 + 4x + 4} - \sqrt{x^2 + 3x + 3} \right)$$

33.

$$\lim_{x \rightarrow \infty} \left(\frac{3x + 4}{1 + 3x} \right)^{x-1}$$

34.

$$\lim_{x \rightarrow \frac{\pi}{2}} \left(\operatorname{tg} x - \frac{1}{\cos x} \right)$$

35.

$$\lim_{x \rightarrow \infty} \frac{\sqrt{x^2 + 2} - \sqrt{4x^2 + 8}}{x}$$

36.

$$\lim_{x \rightarrow 1} \frac{1 + x - 2x^2}{2x^2 - 3x + 1}$$

37.

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

38.

$$\lim_{x \rightarrow 0} x \cot g x$$

39.

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{4x^2 + 5}}{2 - x}$$

40.

$$\lim_{x \rightarrow -\infty} \frac{3x^2 + 2x + 1}{1 - x^3}$$

41.

$$\lim_{x \rightarrow 0^+} \frac{\sin(\sqrt{x})}{x}$$

42.

$$\lim_{x \rightarrow 1} \frac{(1 - x)^3}{1 - x^3}$$

43.

$$\lim_{x \rightarrow \infty} \left(\frac{x + 4}{x + 3} \right)^{2x-1}$$

44.

$$\lim_{x \rightarrow -1} \frac{x^2 - 1}{x^3 + 1}$$

45.

$$\lim_{x \rightarrow \infty} \left(\sqrt{x^2 - 7x + 3} - \sqrt{x^2 + 7x + 3} \right)$$

46.

$$\lim_{x \rightarrow \infty} \left(\frac{x - 1}{x + 2} \right)^{3x+1}$$

47.

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

48.

$$\lim_{x \rightarrow -\infty} \sqrt{x^2 - x} - \sqrt{x^2 + x}$$

49.

$$\lim_{x \rightarrow -\infty} \frac{(1 - x)^3}{1 - x^3}$$

50.

$$\lim_{x \rightarrow -1} \frac{x^4 - 2x^2 + 1}{x^3 + x^2 + x + 1}$$

Spočtěte limitu.

1.

$$\lim_{x \rightarrow 2} \frac{x^3 + 2x^2 - 4x - 8}{x^2 - 5x + 6} = -16$$

2.

$$\lim_{x \rightarrow \infty} \left(\sqrt{x^2 + 7x - 3} - \sqrt{x^2 + 7x + 3} \right) = 0$$

3.

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

4.

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

5.

$$\lim_{x \rightarrow -2} \frac{x^3 + 2x^2 + 4x + 8}{x^2 + 3x + 2} = -8$$

6.

$$\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{x} = \frac{1}{2}$$

7.

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

8.

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

9.

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \sin x}{1 + \cos 2x} = \frac{1}{4}.$$

10.

$$\lim_{x \rightarrow -\infty} \frac{x^4 - 2x^2 + 1}{x^3 + x^2 + x + 1} = -\infty$$

11.

$$\lim_{x \rightarrow 0^+} \frac{\sin x}{1 - \cos 2x} = \infty,$$

12.

$$\lim_{x \rightarrow 1} \frac{1 + x - 2x^2}{1 - x^2} = \frac{3}{2}$$

13.

$$\lim_{x \rightarrow 0} \frac{\sqrt{4-3x} - 2}{x} = -\frac{3}{4}$$

14.

$$\lim_{x \rightarrow 1} \frac{1 + 2x - 3x^2}{1 - x^3} = \frac{4}{3}$$

15.

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

16.

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

17.

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

18.

$$\lim_{x \rightarrow 0} \frac{\sqrt{3x^2 + 2x + 1} - 1}{x} = 1$$

19.

$$\lim_{x \rightarrow 0} \frac{1 - \cos 2x}{1 - \cos x} = 4$$

20.

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

21.

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

22.

$$\lim_{x \rightarrow \infty} \sqrt{x^2 + x} - \sqrt{x^2 - x} = 1$$

23.

$$\lim_{x \rightarrow \infty} \sqrt{x} \left(\sqrt{x-3} - \sqrt{x+3} \right) = -3$$

24.

$$\lim_{x \rightarrow 1} \frac{x^4 - 2x^2 + 1}{x^3 - x^2 + x - 1} = 0$$

25.

$$\lim_{x \rightarrow 1} \frac{x^4 - 2x^2 + 1}{x^3 - x^2 - x + 1} = 2$$

26.

$$\lim_{x \rightarrow 0^-} \frac{1 - \sqrt{2 + 3x + 4x^2}}{5x} = \infty$$

27.

$$\lim_{x \rightarrow 0} (1 - 2x)^{\frac{3-x}{4x}} = e^{-\frac{3}{2}},$$

28.

$$\lim_{x \rightarrow 0^+} \frac{x^2}{\sin \sqrt{x}} = 0,$$

29.

$$\lim_{x \rightarrow -\infty} \frac{x^4 - 2x^2 + 1}{x^2 + 2x + 1} = \infty$$

30.

$$\lim_{x \rightarrow 0} \frac{3 - \sqrt{9 - 3x}}{6x} = \frac{1}{12},$$

31.

$$\lim_{x \rightarrow -\infty} \frac{x^4 - 2x^2 + 1}{x^3 + x^2 + x + 1} = \infty$$

32.

$$\lim_{x \rightarrow \infty} \left(\sqrt{x^2 + 4x + 4} - \sqrt{x^2 + 3x + 3} \right) = \frac{1}{2}$$

33.

$$\lim_{x \rightarrow \infty} \left(\frac{3x + 4}{1 + 3x} \right)^{x-1} = e,$$

34.

$$\lim_{x \rightarrow \frac{\pi}{2}} \left(\operatorname{tg} x - \frac{1}{\cos x} \right) = 0,$$

35.

$$\lim_{x \rightarrow \infty} \frac{\sqrt{x^2 + 2} - \sqrt{4x^2 + 8}}{x} = -1$$

36.

$$\lim_{x \rightarrow 1} \frac{1 + x - 2x^2}{2x^2 - 3x + 1} = -3$$

37.

$$\lim_{x \rightarrow \infty} \left(\frac{2x - 1}{1 + 2x} \right)^{2+x} = e^{-1},$$

38.

$$\lim_{x \rightarrow 0} x \cot x = 1$$

39.

$$\lim_{x \rightarrow -\infty} \frac{\sqrt{4x^2 + 5}}{2 - x} = 2$$

40.

$$\lim_{x \rightarrow -\infty} \frac{3x^2 + 2x + 1}{1 - x^3} = 0$$

41.

$$\lim_{x \rightarrow 0^+} \frac{\sin(\sqrt{x})}{x} = \infty$$

42.

$$\lim_{x \rightarrow 1} \frac{(1 - x)^3}{1 - x^3} = 0,$$

43.

$$\lim_{x \rightarrow \infty} \left(\frac{x + 4}{x + 3} \right)^{2x-1} = e^2,$$

44.

$$\lim_{x \rightarrow -1} \frac{x^2 - 1}{x^3 + 1} = -\frac{2}{3}$$

45.

$$\lim_{x \rightarrow \infty} \left(\sqrt{x^2 + 7x - 3} - \sqrt{x^2 - 7x + 3} \right) = -7$$

46.

$$\lim_{x \rightarrow \infty} \left(\frac{x - 1}{x + 2} \right)^{3x+1} = e^{-9},$$

47.

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

48.

$$\lim_{x \rightarrow -\infty} \sqrt{x^2 - x} - \sqrt{x^2 + x} = 1$$

49.

$$\lim_{x \rightarrow -\infty} \frac{(1 - x)^3}{1 - x^3} = 1$$

50.

$$\lim_{x \rightarrow -1} \frac{x^4 - 2x^2 + 1}{x^3 + x^2 + x + 1} = 0$$