

## LIMITI I FUNKSIONIT

Të njehsohen limitet:

1.  $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x - 4}$ .

2.  $\lim_{x \rightarrow 1} \frac{x^2 - 5x + 4}{x^2 + 6x - 7}$ .

3.  $\lim_{x \rightarrow 1} \frac{x^4 - 2x^2 + 1}{x^2 - 8x + 7}$ .

4.  $\lim_{x \rightarrow 5} \frac{x^2 - 7x + 10}{x^2 - 9x + 20}$ .

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

6.  $\lim_{x \rightarrow -3} \frac{x^4 - 6x^2 - 27}{x^3 + 3x^2 + x + 3}$ .

7.  $\lim_{x \rightarrow 2} \frac{x^2 + 3x - 10}{3x^2 - 5x - 2}$ .

8.  $\lim_{x \rightarrow 5} \frac{x^2 - 6x + 5}{x^3 - 8x^2 + 15x}$ .

9.  $\lim_{x \rightarrow -3} \frac{x^5 - 16x}{2x^2 + 4x - 16}$ .

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

11.  $\lim_{x \rightarrow a} \frac{\sqrt{x} - \sqrt{a}}{\sqrt[4]{x} - \sqrt[4]{a}}$ .

12.  $\lim_{x \rightarrow 1} \frac{\sqrt[4]{x} - \sqrt[6]{x}}{\sqrt[8]{x} - \sqrt[12]{x}}$ .

13.  $\lim_{a \rightarrow 0} \frac{\sqrt{b^2 + 4ac} - \sqrt{b^2 - 4ac}}{2a}$ .

14.  $\lim_{x \rightarrow 4} \frac{8\sqrt{x} - x^2}{8 - 4\sqrt{x}}$ .

15.  $\lim_{x \rightarrow 5} \frac{x^2 - 25}{\sqrt{5x} - 5}$ .

16.  $\lim_{x \rightarrow 7} \frac{4(2 - \sqrt{x-3})}{x^2 - 49}$ .

17.  $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - \sqrt{1-x}}{4x}$ .

18.  $\lim_{x \rightarrow 3} \frac{x-3}{\sqrt{x+1} - 2}$ .

19.  $\lim_{x \rightarrow 0} \frac{\sqrt{x^2+1} - 1}{\sqrt{x^2+16} - 4}$ .

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

21.  $\lim_{x \rightarrow 1} \frac{\sqrt[3]{3x+1} - \sqrt[3]{4}}{\sqrt{2x-1} - 1}$ .

22.  $\lim_{x \rightarrow 8} \frac{\sqrt{1-x} - 3}{2 + \sqrt[3]{x}}$ .

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

24.  $\lim_{x \rightarrow a} \frac{\sqrt{x} - \sqrt{a} + \sqrt{x-a}}{\sqrt{x^2 - a^2}}$ .

25.  $\lim_{x \rightarrow 0} \frac{\sin 4x}{x}$ .

26.  $\lim_{x \rightarrow 0} \frac{\tan x}{x}$ .

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

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

29.  $\lim_{x \rightarrow 0} \frac{\sin(a+x) - \sin(a-x)}{x}$ .

30.  $\lim_{x \rightarrow 0} \frac{\cos x - \sqrt[3]{\cos x}}{\sin^2 x}$ .

31.  $\lim_{x \rightarrow 0} \frac{\sin 3x}{\sin 2x}$ .

32.  $\lim_{x \rightarrow 0} \frac{\tan x - \sin x}{x^3}$ .

33.  $\lim_{x \rightarrow 0} \frac{2x - \sin x}{3x + \sin x}$ .

34.  $\lim_{x \rightarrow 0} \frac{\sin 4x}{\sqrt{x+1} - 1}$ .

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

36.  $\lim_{x \rightarrow \pi} \frac{\cos \frac{x}{2}}{x - \pi}$ .

37.  $\lim_{x \rightarrow 1} \frac{\sin(1-x)}{\sqrt{x} - 1}$ .

38.  $\lim_{x \rightarrow a} \frac{\sin^2 x - \sin^2 a}{x^2 - a^2}$ .

39.  $\lim_{x \rightarrow \frac{\pi}{2}} \left( \left( \frac{\pi}{2} - x \right) \tan x \right)$ .

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

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

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

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

44.  $\lim_{x \rightarrow 0} \frac{\sin(a+x) - \sin(a-x)}{\tan(a+x) - \tan(a-x)}$ .
45.  $\lim_{x \rightarrow 0} \frac{\sqrt{1+\tan x} - \sqrt{1+\sin x}}{x^3}$ .
46.  $\lim_{x \rightarrow 0} \frac{\cos x - \sin\left(x + \frac{\pi}{2}\right)\sqrt{\cos 2x}}{x^2}$ .
47.  $\lim_{x \rightarrow 0} \frac{1 - \cos(1 - \cos x)}{x^4}$ .
48.  $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt[3]{1+x} - \sqrt[3]{1-x}}$ .
49.  $\lim_{x \rightarrow 1} \frac{x^m - 1}{x^n - 1}$ .
50.  $\lim_{x \rightarrow \infty} \left(\frac{x+1}{x-1}\right)^x$ .
51.  $\lim_{x \rightarrow \infty} \left(\frac{x+m}{x-m}\right)^x$ .
52.  $\lim_{x \rightarrow \infty} \left(\frac{mx+n}{mx+p}\right)^x$ .
53.  $\lim_{x \rightarrow \infty} \left(1 + \frac{3}{x}\right)^x$ .
54.  $\lim_{x \rightarrow \infty} \left(\frac{x^2+1}{x^2-2}\right)^{x^2}$ .
55.  $\lim_{x \rightarrow \infty} \frac{\log(1+10x)}{x}$ .
56.  $\lim_{x \rightarrow \infty} \frac{1}{x} \ln \sqrt{\frac{1+x}{1-x}}$ .
57.  $\lim_{x \rightarrow \infty} \left(1 - \frac{5}{4x}\right)^x$ .
58.  $\lim_{x \rightarrow 0} (1+2x)^{\frac{5}{x}}$ .
59.  $\lim_{x \rightarrow \infty} \left(\frac{x^2+x+1}{x^2-x-1}\right)^x$ .
60.  $\lim_{x \rightarrow \infty} \left(\frac{x^2+5x+4}{x^2-3x+7}\right)^x$ .
61.  $\lim_{x \rightarrow 0} (1+3\tan^2 x)^{\cot^2 x}$ .
62.  $\lim_{x \rightarrow 0} (\cos x)^{\frac{1}{\sin^2 x}}$ .
63.  $\lim_{x \rightarrow 0} \frac{e^x - 1}{x}$ .
64.  $\lim_{x \rightarrow 0} \frac{a^x - 1}{x}$ .
65.  $\lim_{x \rightarrow 0} \frac{e^{-2x} - 1}{x}$ .
66.  $\lim_{x \rightarrow 0} \frac{e^{ax} - e^{bx}}{x}$ .
67.  $\lim_{x \rightarrow 0} \frac{e^x - 1}{\sin x}$ .
68.  $\lim_{x \rightarrow 0} \frac{\sin^2 x}{\sqrt{1+x\sin x} - \cos x}$ .
69.  $\lim_{x \rightarrow \frac{\pi}{6}} \frac{2\cos x - \sqrt{3}}{\sin\left(\frac{\pi}{6} - x\right)}$ .
70.  $\lim_{x \rightarrow 0} \frac{\sin\left(\frac{\pi}{2} - x\right)}{2\cos\frac{x}{2} - \sqrt{2}}$ .
71.  $\lim_{x \rightarrow 0} \frac{e^{x^2} - \cos x}{x^2}$ .
72.  $\lim_{x \rightarrow 0} \frac{e^{x^2} - 1}{\sin x \ln(1+x)}$ .
73.  $\lim_{x \rightarrow 0} (1 + \tan^2 \sqrt{x})^{\frac{1}{2x}}$ .
74.  $\lim_{x \rightarrow 0} \frac{\sqrt[m]{\cos ax} - \sqrt[n]{\cos bx}}{x^2}$ .
75.  $\lim_{x \rightarrow 0} \frac{\sin(\sin x)}{x}$ .
76.  $\lim_{x \rightarrow 0} \frac{2\arcsin x}{3x}$ .
77.  $\lim_{x \rightarrow 0} \frac{\arctan x}{x}$ .
78.  $\lim_{x \rightarrow 0} \frac{\arctan 2x}{\sin 3x}$ .
79.  $\lim_{x \rightarrow 0} \frac{\arcsin(1-2x)}{4x^2 - 1}$ .
80.  $\lim_{x \rightarrow 1} \frac{1-x^2}{\sin \pi x}$ .
81.  $\lim_{x \rightarrow \pi} \frac{\sin \frac{x}{2} + \cos x}{1 + \sin^2 x + \cos x}$ .
82.  $\lim_{x \rightarrow a} \sin \frac{x-a}{2} \tan \frac{\pi x}{2a}$ .