1	1) $\lim\limits_{x\to 0}\frac{\ln\cos x}{x}$; 2) $\lim\limits_{x\to 0}\left[\frac{(1+x)^{\frac{1}{x}}}{e}\right]^{\frac{1}{x}}$	16	1) $\lim\limits_{x\to 1}\frac{\ln x}{x-1}$; 2) $\lim\limits_{x\to\frac{\pi}{6}}\frac{1-2\sin x}{\cos 3x}$
2	1) $\lim\limits_{x\to 0}\frac{e^x-1}{\sin x}$; 2) $\lim\limits_{x\to 0}\left(\frac{2}{\pi}\arccos x\right)^{\frac{1}{x}}$	17	1) $\lim\limits_{x\to 1}\frac{x^x-1}{\ln x-x+1}$; 2) $\lim\limits_{x\to 0}\frac{e^{2x}-1}{\ln(1+2x)}$
3	1) $\lim\limits_{x\to 0}\frac{x-\operatorname{arctg} x}{x^3}$; 2) $\lim\limits_{x\to 0}(e^{2x}+x)^{\frac{1}{x}}$	18	1) $\lim\limits_{x\to 0}e^{-\frac{1}{x^2}}\cdot x^{-100}$; 2) $\lim\limits_{x\to 0}\left(\frac{1}{x\sin x}-\frac{1}{x^2}\right)$
4	1) $\lim\limits_{x\to 0}\frac{e^{x^2}-1}{\cos x-1}$; 2) $\lim\limits_{x\to 0}(\sin x)^{\operatorname{tg} x}$	19	1) $\lim\limits_{x\to 1}x^{\frac{1}{1-x}}$; 2) $\lim\limits_{x\to 0}(1-e^{2x})\cdot\operatorname{ctg} x$
5	1) $\lim\limits_{x\to+\infty}(x^4e^{-x})$; 2) $\lim\limits_{x\to 0}x^{\sin x}$	20	1) $\lim\limits_{x\to 1}(2-x)^{\operatorname{tg}\frac{\pi x}{2}}$; 2) $\lim\limits_{x\to 0}x\cdot\ln x$
6	1) $\lim\limits_{x\to 1}\left[\frac{x}{x-1}-\frac{1}{\ln x}\right]$; 2) $\lim\limits_{x\to 0}x^{\frac{1}{\ln(e^x-1)}}$	21	1) $\lim\limits_{x\to\frac{\pi}{4}}(\operatorname{tg} x)^{\operatorname{tg} 2x}$; 2) $\lim\limits_{x\to 0}\frac{\ln x}{\operatorname{ctg} x}$
7	1) $\lim\limits_{x\to 0}(\operatorname{ctg} x-\frac{1}{x})$; 2) $\lim\limits_{x\to a}(2-\frac{x}{a})^{\operatorname{tg}\frac{\pi x}{2a}}$	22	1) $\lim\limits_{x\to\infty}\left[\operatorname{tg}\left(\frac{\pi x}{2x+1}\right)\right]^{\frac{1}{x}}$; 2) $\lim\limits_{x\to 1}\frac{x-1}{\ln x}$
8	1) $\lim\limits_{x\to\infty}(1+x^2)^{\frac{1}{x^4}}$; 2) $\lim\limits_{x\to 0}\frac{x-\operatorname{arctg} x}{x^3}$	23	1) $\lim\limits_{x\to 0}\frac{(1+x)^{\frac{1}{x}}-e}{x}$; 2) $\lim\limits_{x\to\pi}(\pi-x)\cdot\operatorname{tg}\frac{x}{2}$
9	1) $\lim\limits_{x\to 0}(\frac{1}{\sin x}-\frac{1}{\operatorname{tg} x})$; 2) $\lim\limits_{x\to 0}\frac{a^x-e^x}{\operatorname{tg} x}$	24	1) $\lim\limits_{x\to 0}\left[\frac{1}{\ln(x+\sqrt{1+x^2})}-\frac{1}{\ln(1+x)}\right]$; 2) $\lim\limits_{x\to 0}\frac{e^x-\sin x}{x-\sin x}$
10	1) $\lim\limits_{x\to 0}(1+x^2)^{\frac{1}{x^4}}$; 2) $\lim\limits_{x\to\frac{\pi}{4}}\frac{1-\operatorname{tg} x}{\cos 2x}$	25	1) $\lim\limits_{x\to 0}\left(\frac{a^x-x\ln a}{b^x-x\ln b}\right)^{\frac{1}{x^2}}$; 2) $\lim\limits_{x\to 1}\left[\frac{x}{x-1}-\frac{1}{\ln x}\right]$
11	1) $\lim\limits_{x\to+0}x^x$; 2) $\lim\limits_{x\to 1}\frac{\ln x}{1-x^2}$	26	1) $\lim\limits_{x\to 0}\frac{(a+x)^x-a^x}{x^2}$; 2) $\lim\limits_{x\to 0}\frac{\ln\sin 2x}{\ln\sin x}$
12	1) $\lim\limits_{x\to+\infty}x^{\frac{1}{x}}$; 2) $\lim\limits_{x\to 0}\frac{e^{ax}-e^{bx}}{\sin x}$	27	1) $\lim\limits_{x\to+\infty}(\frac{2}{\pi}\operatorname{arctg} x)^x$; 2) $\lim\limits_{x\to\infty}\left[x\cdot(e^{\frac{1}{x}}-1)\right]$
13	1) $\lim\limits_{x\to 0}x^2e^{\frac{1}{x^2}}$; 2) $\lim\limits_{x\to\frac{\pi}{2a}}\frac{1-\sin ax}{(2ax-\pi)^2}$	28	1) $\lim\limits_{x\to 0}\left(\frac{\arcsin x}{x}\right)^{\frac{1}{x^2}}$; 2) $\lim\limits_{x\to 0}\frac{\ln x}{\ln\sin x}$
14	1) $\lim\limits_{x\to 0}\frac{\sqrt{x}}{\ln(1+x)}$; 2) $\lim\limits_{x\to\frac{\pi}{2}}(\operatorname{tg} x)^{2x-\pi}$	29	1) $\lim\limits_{x\to 0}\left(\frac{\sin x}{x}\right)^{\frac{1}{x^2}}$; 2) $\lim\limits_{x\to 0}\left[x^2\cdot e^{\frac{1}{x^2}}\right]$
15	1) $\lim\limits_{x\to 0}\frac{e^x-e^{-x}}{x}$; 2) $\lim\limits_{x\to\frac{\pi}{2}}\frac{\operatorname{tg} x}{\operatorname{tg} 3x}$	30	1) $\lim\limits_{x\to 0}\left(\frac{\operatorname{arctg} x}{x}\right)^{\frac{1}{x^2}}$; 2) $\lim\limits_{x\to 0}(e^x+x)^{\frac{1}{x}}$

Задачи для самостоятельного решения

3.1.1. $y = \dfrac{x^2}{3x+5}$

3.1.2. $y = \dfrac{x^2}{x+1}$

3.1.3. $y = \dfrac{1}{x} - x$

3.1.4. $y = \dfrac{2x^3 - 5x^2 + 14x - 6}{4x^2}$

3.1.5. $y = \dfrac{x^2+3}{x-1}$

3.1.6. $y = \dfrac{x^2+5}{x-2}$

3.1.7. $y = -\dfrac{x^3}{(x+1)^2}$

3.1.8. $y = \dfrac{x^2-x-6}{x-2}$

3.1.9. $y = \dfrac{x^2}{x-2}$

3.1.10. $y = \dfrac{x^3-5x}{5-3x^2}$

3.1.11. $y = \dfrac{4-x^2}{2x-1}$

3.1.12. $y = \dfrac{x^2+2x-1}{x}$

3.1.13. $y = \dfrac{(x+1)^2}{x-2}$

3.1.14. $y = \dfrac{x^2+3}{x+1}$

3.1.15. $y = \dfrac{x}{4(x^2+1)}$

3.1.16. $y = \dfrac{x^3}{(x-1)^2}$

3.1.17. $y = \dfrac{x^2}{1-x}$

3.1.18. $y = \dfrac{x^3+4}{x^2}$

3.1.19. $y = \dfrac{2}{x^2+2x}$

3.1.20. $y = \dfrac{4-x^3}{x^2}$

3.1.21. $y = \dfrac{x^2}{(x-1)^2}$

3.1.22. $y = \dfrac{4x^2}{3+x^2}$

3.1.23. $y = \dfrac{12-3x^2}{x^2+12}$

3.1.24. $y = -\dfrac{8x}{x^2+4}$

3.1.25. $y = \dfrac{2x^3+1}{x^2}$

3.1.26. $y = -\dfrac{x^2}{(x+2)^2}$

3.1.27. $y = \dfrac{2x-1}{(x-1)^2}$

3.1.28. $y = \dfrac{x^3}{x^2-4}$

3.1.29. $y = \dfrac{4x^2}{3+x^2}$

3.1.30. $y = \dfrac{12x}{9+x^2}$

3.1.31. $y = \dfrac{x^2}{(2-x)^2}$

3.1.32. $y = \dfrac{1-3x}{(2-x)^2}$

3.1.33. $y = \dfrac{3-4x}{(x-1)^2}$

3.1.34. $y = \dfrac{(x-1)^2}{(x+1)^2}$

3.2.1. $y = \sqrt[3]{(2-x)(x^2-4x+1)}$

3.2.2. $y = \sqrt[3]{x^2(x-2)^2}$

3.2.3. $y = \sqrt[3]{(x+2)(x^2+4x+1)}$

3.2.4. $y = \sqrt[3]{x^2(x+4)^2}$

3.2.5. $y = \sqrt[3]{(x-1)(x^2-2x-2)}$

3.2.6. $y = \sqrt[3]{x^2(x+3)^2}$

3.2.7. $y = \sqrt[3]{(x-1)(x+2)^2}$

3.2.8. $y = \sqrt[3]{x^2(x+2)^2}$

3.2.9. $y = -\sqrt[3]{(x+3)(x^2+6x+6)}$

3.2.10. $y = \sqrt[3]{(x^2-2x-3)^2}$

3.2.11. $y = \sqrt[3]{(x+1)(x^2+2x-2)}$

3.2.12. $y = \sqrt[3]{x^2(x-4)^2}$

3.2.13. $y = \sqrt[3]{(x-3)(x^2-6x+6)}$

3.2.14. $y = \sqrt[3]{(x^2-4x+3)^2}$

3.2.15. $y = \sqrt[3]{(x-4)(x+2)^2}$

3.2.16. $y = \sqrt[3]{x^2(x+6)}$

3.2.17. $y = \sqrt[3]{(x+1)(x-2)^2}$

3.2.18. $y = \sqrt[3]{x^2(x-3)}$

3.2.19. $y = \sqrt[3]{(x-1)^2} - \sqrt[3]{x^2}$

3.2.20. $y = \sqrt[3]{x^2(x-6)}$

3.2.21. $y = \sqrt[3]{(x-2)^2} - \sqrt[3]{(x-3)^2}$

3.2.22. $y = \sqrt[3]{x(x-3)^2}$

3.2.23. $y = \sqrt[3]{(x-1)^2} - \sqrt[3]{(x-2)^2}$

3.2.24. $y = \sqrt[3]{(x+2)(x-4)^2}$

3.2.25. $y = \sqrt[3]{x^2} - \sqrt[3]{(x-1)^2}$

3.2.26. $y = \sqrt[3]{x(x+3)^2}$

3.2.27. $y = \sqrt[3]{(x+2)^2} - \sqrt[3]{(x+3)^2}$

3.2.28. $y = \sqrt[3]{x(x-6)^2}$

3.2.29. $y = \sqrt[3]{(x+1)^2} - \sqrt[3]{(x+2)^2}$

3.2.30. $y = \sqrt[3]{x(x+6)^2}$

3.2.31. $y = \sqrt[3]{(x-1)^2} - \sqrt[3]{(x-3)^2}$

3.2.32. $y = \sqrt[3]{x(x-1)^2}$

3.2.33. $y = \sqrt[3]{(x^2-4x+2)^2}$

3.2.34. $y = 1 + \sqrt[3]{(x-1)^2}$