Vypoctete limity:

1. $\lim_{x\to+\infty} x(3^{1/x}-2^{1/x})$
2. $\lim_{x\to a} \frac{x^x-a^a}{x-a}$
3. $\lim_{x\to 0-} \frac{\ln(1+\sin^2 x)}{\ln(1+\operatorname{tg}^2 x)}$
4. $\lim_{x\to 0} \frac{\ln\cos(ax)}{\ln\cos(bx)}$
5. $\lim_{x\to 0}(1+x^2)^{\frac{1}{\sin^2 x}}$
6. $\lim_{x\to+\infty}\left(\frac{1+x}{2+x}\right)^{\frac{1}{1+\sqrt{x}}}$
7. $\lim_{x\to\pi+}\left(\frac{x}{\pi}\right)^{\frac{1}{1+\cos x}}$
8. $\lim_{x\to+\infty}\left(\sin\frac{1}{x}+\cos\frac{1}{x}\right)^x$
9. $\lim_{x\to 0}(x+\exp x)^{1/x}$
10. $\lim_{x\to 0}\left(\frac{a^x+b^x}{2}\right)^{1/x}$
11. $\lim_{x\to 0}\left(\frac{1+x2^x}{1+x3^x}\right)^{1/x^2}$
12. $\lim_{x\to 0+}(\cos\sqrt{x})^{1/x}$
13. $\lim_{x\to+\infty}\left(\frac{x+2}{2x+3}\right)^{x^2}$
14. $\lim_{x\to+\infty}\left(\frac{x^2-1}{x^2+1}\right)^{1/x^2}$
15. $\lim_{x\to+\infty}\left(\frac{1+x}{1-x}\right)^{\frac{1-\sqrt{x}}{1+\sqrt{x}}}$

Ve vnitrnich bodech definicniho oboru spoctete derivace funkci:

1. $\frac{ax+b}{cx+d}$
2. $(\sin x)^{\cos x}$
3. $\ln(x+\sqrt{x^2+1})$
4. $\operatorname{arctg} x+\operatorname{arctg} 1/x$
5. x^{x^x}
6. $\arcsin\frac{x}{\sqrt{x^2+1}}$
7. $\ln\sqrt{\frac{x+1}{x-1}}$
8. $\ln[\operatorname{tg}(x/2)]$
9. $\sqrt{x-\sqrt{x}}$
10. $\operatorname{arctg}\left(\frac{x}{\exp x+1}\right)$
11. $\frac{x^2+\sin x}{x^4+1}$
12. $(\cos x)^{\sin x}$
13. $(\ln x)^x$
14. $\arccos\left(\frac{1}{1-x}\right)$
15. $\sqrt[3]{\frac{x+2}{x-3}}$
16. $\ln|\sin x|$
17. $\sqrt[3]{x^2+2x-3}$
18. $\operatorname{arccotg}\left(\frac{\exp x}{x+1}\right)$