I. Výrazy typu $\left\|\dfrac{0}{0}\right\|$:

1) $\displaystyle\lim_{x\to 0^+}\frac{e^x-1-x}{x(e^x-1)}=\frac{1}{2}$

2) $\displaystyle\lim_{x\to 0}\frac{x\cos x-\sin x}{x^3}=-\frac{1}{3}$

3) $\displaystyle\lim_{x\to \frac{\pi}{4}}\frac{\operatorname{tg} x-1}{\sin 4x}=-\frac{1}{2}$

4) $\displaystyle\lim_{x\to \frac{\pi}{2}}\frac{\cos^2 x}{x-\dfrac{\pi}{2}}=0$

5) $\displaystyle\lim_{x\to \frac{\pi}{4}}\frac{1-\operatorname{tg} x}{\cos 2x}=1$

6) $\displaystyle\lim_{x\to \frac{\pi}{6}}\frac{1-2\sin x}{\cos 3x}=\frac{\sqrt{3}}{3}$

7) $\displaystyle\lim_{x\to 0}\frac{e^x-e^{-x}}{x}=2$

8) $\displaystyle\lim_{x\to 0}\frac{e^x-e^{-x}}{\sin x\cos x}=2$

9) $\displaystyle\lim_{x\to 0}\frac{e^{2x}-1}{\ln(1+2x)}=1$

10) $\displaystyle\lim_{x\to \frac{\pi}{2}}\frac{1-\sin x+\cos x}{\sin 2x-\cos x}=1$

11) $\displaystyle\lim_{x\to 0}\frac{x-\sin x}{1-\cos x}=0$

12) $\displaystyle\lim_{x\to 0}\frac{e^x-e^{-x}-2x}{x^3}=\frac{1}{3}$

13) $\displaystyle\lim_{x\to 1}\frac{x\ln x-x+1}{(x-1)\ln x}=\frac{1}{2}$

14) $\displaystyle\lim_{x\to 3}\frac{x^2-9}{x^2-2x-3}=\frac{3}{2}$

II. Výrazy typu $\left\|\dfrac{\infty}{\infty}\right\|$:

1) $\displaystyle\lim_{x\to \infty}\frac{x^2+x+4}{2x^2+x-1}=\frac{1}{2}$

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

3) $\displaystyle\lim_{x\to \infty}\frac{x^2-x-1}{x^3-x-1}=0$

4) $\displaystyle\lim_{x\to -\infty}\frac{x^3-x^2+3}{2x^4-x+1}=0$

5) $\displaystyle\lim_{x\to \infty}\frac{x^3+2x+4}{x^2-x+1}=\infty$

6) $\displaystyle\lim_{x\to \infty}\frac{x^4+x^3+12}{x^2+2x+1}=\infty$

7) $\displaystyle\lim_{x\to -\infty}\frac{x^4-x-1}{x^3-x-1}=-\infty$

8) $\displaystyle\lim_{x\to 0^+}\frac{\ln x}{\operatorname{cotg} x}=0$

9) $\displaystyle\lim_{x\to 0^+}\frac{\ln x}{\ln \sin x}=1$

10) $\displaystyle\lim_{x\to \infty}\frac{x^2+5}{e^{2x}}=0$