① $\lim_{x\to 1} \frac{4x^2-7x+3}{2x^2-5x+3} = \frac{0}{0} \xrightarrow{\text{hop}} \lim_{x\to 1} \frac{8x-7}{10x-5} = \frac{8-7}{10-5} = \frac{1}{2}$

② $\lim_{x\to 0} \frac{|3x-1|-|3x+1|}{x} = \frac{0}{0} \xrightarrow{\text{تعیین علامت}} \frac{-3x+1-3x-1}{x} = \frac{-6x}{x} = -6$

③ $\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} = \frac{0}{0} \Rightarrow \frac{(\sqrt{x}-2)(\sqrt{x}+2)}{(\sqrt{x}-2)} = \sqrt{x}+2 = 4$

④ $\lim_{x\to 2} \frac{x-\sqrt{3x}}{2x^2-x-6} \times \frac{+\sqrt{3x}+x}{x+\sqrt{3x}} = \frac{x(x-3)}{(2x+3)(x-2)} = \frac{x}{4(2x+3)} = \frac{2}{14} = \frac{1}{7}$

⑤ $\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} \times \frac{\cdots}{\cdots} \times \frac{\cdots}{\cdots} = \frac{-(1-x)}{-(1-x)} = -2$

⑥ $\lim_{x\to 3} \frac{\sqrt{2x+3}-3}{\sqrt[3]{3x+6}-3} \times \frac{\cdots}{\cdots} \times \frac{\cdots}{\cdots} = \frac{(2x-12)\times 3}{(3x-15)\times 2} = \frac{6(x-5)}{5(x-5)} = \frac{6}{5}$

⑦ $\lim_{x\to 1} \frac{\sqrt[3]{3x+\sqrt{x}}-2}{\sqrt{x}-1} \times \frac{\cdots}{\cdots} \times \frac{\cdots}{\cdots} = \frac{(3x+\sqrt{x}-4)\,3}{4(x-1)} \times \frac{(3x-4+\sqrt{x})}{(3x-4+\sqrt{x})} = \frac{3(9x^2+14-24x-x)}{4(x-1)(3x-\sqrt{x}-4)} =$

$\frac{(9x-14)(x-1)3}{4(x-1)(3x-\sqrt{x}-4)} = \frac{-21}{-8} = \frac{21}{8}$

⑧ $\lim_{x\to \pi} \frac{1+\cos^3 x}{\sin^2 x} = \frac{0}{0} = \frac{(1+\cos x)(1-\cos x+\cos^2 x)}{(1-\cos x)(1+\cos x)} = \frac{1-(-1)+(-1)^2}{1-(-1)} = \frac{3}{2}$

⑨ $\lim_{x\to \frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} = \frac{0}{0} = \frac{\frac{\cos x-\sin x}{\cos x}}{-(\cos x-\sin x)} = \frac{1}{-\cos x} = -\frac{1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\sqrt{2}$

⑩ $\lim_{x\to \frac{\pi}{4}} \frac{\tan^2 x-1}{\cos 4x} = \frac{0}{0} = \frac{\frac{\sin^2 x-\cos^2 x}{\cos^2 x}}{-(\sin^2 x-\cos^2 x)} = \frac{1}{-\cos^2 x} = \frac{1}{-(-\frac{\sqrt{2}}{2})^2} = \frac{1}{-\frac{1}{2}} = -2$