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

۲- $\lim_{x\to 0} \frac{|\cos x-1|-|\cos x+1|}{x} = \frac{1-\cos x-\cos x-1}{x} = -2$

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

۴- $\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-7} = \frac{x^2-2x}{2x^2-x-7} \times \frac{1}{4} = \frac{x(x-2)}{(x-2)(2x+3)} \times \frac{1}{4} = \frac{2}{7} \times \frac{1}{4} = \frac{2}{28}$

۵- $\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{3-x}} = \frac{1-x}{4-3+x} \times \frac{4}{2} = -2$

۶- $\lim_{x\to 4} \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} = \frac{3x+4-16}{5x+7-27} \times \frac{27}{8} = \frac{3}{5} \times \frac{27}{8} = \frac{81}{40}$

۷- $\lim_{x\to 1} \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} = \frac{3x+\sqrt{x}-4}{x-1} \times \frac{3}{4} = \frac{3t^2+t-4}{t^2-1} \times \frac{3}{4} = \frac{6t+1}{2t} \times \frac{3}{4} = \frac{21}{8}$

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

۹- $\lim_{x\to \frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} = \frac{1-\frac{\sin x}{\cos x}}{\sin x-\cos x} = \frac{\frac{\cos x-\sin x}{\cos x}}{\sin x-\cos x} = \frac{-1}{\cos x} = -\frac{1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\sqrt{2}$

۱۰- $\lim_{x\to \frac{3\pi}{4}} \frac{\tan^2 x-1}{\cos 2x} = \frac{(\tan x-1)(\tan x+1)}{\cos 2x} = \frac{(\frac{\sin x}{\cos x}-1)(\frac{\sin x}{\cos x}+1)}{\cos^2 x-\sin^2 x}$

$= \frac{(\frac{\sin x-\cos x}{\cos x})(\frac{\sin x+\cos x}{\cos x})}{(\cos x-\sin x)(\cos x+\sin x)} = -\frac{1}{\cos^2 x} = -2$