۱- $\lim_{x\to 1} \frac{۴x^۲-۷x+۳}{۵x^۲-۸x+۳} = \frac{(x-1)(۴x-۳)}{(x-1)(۵x-۳)} = \frac{۴x-۳}{۵x-۳} = \frac{۱}{۲}$

۲- $\lim_{x\to ۰} \frac{|۳x-۱|-|۳x+۱|}{x} = \frac{-(۳x-۱)-(۳x+۱)}{x} = \frac{-۶x}{x} = -۶$

۳- $\lim_{x\to ۴} \frac{x-۴}{\sqrt{x}-۲} = \frac{(\sqrt{x}-۲)(\sqrt{x}+۲)}{\sqrt{x}-۲} = ۲+۲ = ۴$

۴- $\lim_{x\to ۲} \frac{x-\sqrt{۲x}}{۲x^۲-x-۶} \times \frac{x+\sqrt{۲x}}{x+\sqrt{۲x}} = \frac{x^۲-۲x}{(x+\sqrt{۲x})(۲x^۲-x-۶)} = \frac{x(x-۲)}{(x+\sqrt{۲x})(x-۲)(۲x+۳)} = \frac{۲}{۴\times ۷} = \frac{۲}{۲۸} = \frac{۱}{۱۴}$

۵- $\lim_{x\to ۱} \frac{۱-\sqrt{x}}{۲-\sqrt{۵-x}} \times \frac{۱+\sqrt{x}}{۱+\sqrt{x}} \times \frac{۲+\sqrt{۵-x}}{۲+\sqrt{۵-x}} = \frac{(۱-x)(۲+\sqrt{۵-x})}{(۱-x)(۱+\sqrt{x})} = \frac{۴}{۲} = ۲$

۶- $\lim_{x\to ۴} \frac{\sqrt{۳x+۴}-۴}{\sqrt[۳]{۵x+۷}-۳} \times \frac{\sqrt{۳x+۴}+۴}{\sqrt{۳x+۴}+۴} \times \frac{\sqrt[۳]{(۵x+۷)^۲}+۳\sqrt[۳]{۵x+۷}+۹}{\sqrt[۳]{(۵x+۷)^۲}+۳\sqrt[۳]{۵x+۷}+۹} = \frac{۳\times ۲۷}{۵\times ۸} = \frac{۸۱}{۴۰}$

۷- $\lim_{x\to ۱} \frac{\sqrt{۳x+\sqrt{x}}-۲}{\sqrt[۳]{x}-۱} \times \frac{\sqrt{۳x+\sqrt{x}}+۲}{\sqrt{۳x+\sqrt{x}}+۲} \times \frac{\sqrt[۳]{x^۲}+\sqrt[۳]{x}+۱}{\sqrt[۳]{x^۲}+\sqrt[۳]{x}+۱} = \frac{(۳\sqrt{x}+۴)(\sqrt[۳]{x^۲}+\sqrt[۳]{x}+۱)}{(\sqrt{x}+۱)(\sqrt{۳x+\sqrt{x}}+۲)} = \frac{۳\times ۷}{۲\times ۴} = \frac{۲۱}{۸}$

۸- $\lim_{x\to \pi} \frac{۱+\cos^۳x}{\sin^۲x} = \frac{(۱+\cos x)(\cos^۲x-\cos x+۱)}{(۱-\cos x)(۱+\cos x)} = \frac{۳}{۲}$

$۱-\cos^۲x = (۱-\cos x)(۱+\cos x)$

۹- $\lim_{x\to \frac{\pi}{۴}} \frac{۱-\tan x}{\sin x-\cos x} = \frac{\frac{\cos x-\sin x}{\cos x}}{-(\cos x-\sin x)} = \frac{۱}{-\cos x} = \frac{۱}{-\frac{\sqrt{۲}}{۲}} = \frac{-۲}{\sqrt{۲}} = -\sqrt{۲}$

۱۰- $\lim_{x\to \frac{۳\pi}{۴}} \frac{\tan^۲x-۱}{\cos ۲x} = \frac{\sin^۲x-\cos^۲x}{-(\sin^۲x-\cos^۲x)} = \frac{-۱}{\cos^۲x} = \frac{-۱}{(\frac{-\sqrt{۲}}{۲})^۲} = -۲$