نام و نام خانوادگی: نرگس احمدی شماره تکلیف: ۳۵ کلاس: سه تجربی ۵ دختر یازدهم

۱)

$$\lim_{x\to 1} \frac{4x^2-7x+3}{5x^2-8x+3} = \frac{0}{0} \longrightarrow \frac{(x-1)(4x-3)}{(x-1)(5x-3)} = \boxed{\frac{1}{2}}$$

۲)

$$\lim_{x\to 0} \frac{|1+x^3|-|1-x^3|}{x} = \frac{0}{0} \longrightarrow \frac{(1+x^3)-(1-x^3)}{x} = \frac{1-x^3-1+x^3}{x} = \frac{-4x}{x} = \boxed{-4}$$

۳)

$$\lim_{x\to 3} \frac{9-x}{2-\sqrt{x-1}} = \frac{0}{0} \longrightarrow \frac{(2+\sqrt{x-1})(2-\sqrt{x-1})}{(2-\sqrt{x-1})} = \boxed{4}$$

۴)

$$\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-2x^2} = \frac{0}{0} \longrightarrow \times \frac{x+\sqrt{2x}}{x+\sqrt{2x}} = \frac{x(x-2)}{(2-x)(3+x)(\sqrt{2x}+x)} = \frac{2}{8\times 4} = \boxed{\frac{1}{16}}$$

۵)

$$\lim_{x\to 1} \frac{\sqrt{x}-1}{\sqrt{x-5}-2} = \frac{0}{0} \times \frac{1+\sqrt{x}}{1+\sqrt{x}} \times \frac{x-5+4}{\sqrt{x-5}+2} = \frac{x-5+4}{-(1+\sqrt{x})(\sqrt{x-5}+2)} = \frac{-2+4}{-4} = \boxed{-2}$$

$$\lim_{x\to 3}\frac{\sqrt{5x+1}-4}{\sqrt{2x+10}-4}=\frac{0}{0}\longrightarrow \frac{\text{مزدوج}}{\text{مزدوج}}\times\frac{\text{مزدوج}}{\text{مزدوج}}=\frac{(x-3)(x+16)(\sqrt{5x+1}+4)}{(x-3)(x+5)(\sqrt{2x+10}+4)}$$

$$=\frac{(x+16)(\sqrt{5x+1}+4)}{(x+5)(\sqrt{2x+10}+4)}=\frac{32\times 8}{10\times 8}=\frac{16}{5}$$

٩)

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

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

٨)

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

٧)

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

٦)

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

١٠)