Subject: ( ) حسا رحیم لطیف ۳۰ Date: ۲۰

$$\lim_{x\to ۱} \frac{۴x^۲-۷x+۳}{۵x^۲-۸x+۳} \overset{\text{(هوپیتال)}}{=} \frac{۸x-۷}{۱۰x-۸} = \frac{۱}{۲}$$ (۱) ۲

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

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

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

$$\lim_{x\to ۱} \frac{۱-\sqrt{x}}{۲-\sqrt{۵-x}} \times \frac{۱+\sqrt{x}}{۱+\sqrt{x}} \times \frac{۲+\sqrt{۵-x}}{۲+\sqrt{۵-x}} = \frac{\overset{-۱}{\cancel{(۱-x)}}(۲+\sqrt{۵-x})}{\cancel{(-۱+x)}(۱+\sqrt{x})}$$ (۵) ۶

$$-\frac{۲+\sqrt{۵-x}}{۱+\sqrt{x}} = -\frac{۲+\sqrt{۴}}{۱+\sqrt{۱}} = -\frac{۴}{۲} = -۲$$

$$\lim_{x\to ۴} \frac{\sqrt{۳x+۴}-۴}{\sqrt[۳]{۵x+۷}-۳} \times \frac{\sqrt{۳x+۴}+۴}{\sqrt{۳x+۴}+۴} \times \frac{\overbrace{\sqrt[۳]{(۵x+۷)^۲}+۹+۳\sqrt[۳]{۵x+۷}}^{A}}{\sim} =$$ (۶) ۶

$$\frac{۳\cancel{(x-۴)}(A)}{۵\cancel{(x-۴)}(\sqrt{۳x+۴}+۴)} = \frac{۳}{۵} \times \frac{۲۷}{۸} = \frac{۸۱}{۴۰}$$

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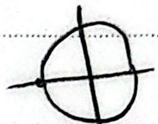
$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\times\frac{\sqrt{3x+\sqrt{x}}+2}{\sqrt{3x+\sqrt{x}}+2}\times\overbrace{\frac{\sqrt[3]{x^2}+1+\sqrt[3]{x}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}}}^{A}=$$ ۷

ص

$$=\frac{(3x+\sqrt{x}-4)(A)}{(x-1)(\sqrt{3x+\sqrt{x}}+2)}=\frac{\cancel{(\sqrt{x}-1)}(3\sqrt{x}+4)(A)}{\cancel{(x-1)}(\sqrt{3x+\sqrt{x}}+2)}=\frac{(3\sqrt{x}+4)(A)}{(\sqrt{x}+1)(\sqrt{3x+\sqrt{x}}+2)}=$$

$$x-1 \to \sqrt{x}+1$$

$$\frac{7\times 3}{2\times 4}=\frac{21}{8}$$



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

$$\frac{3}{2}$$

ص

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

ص

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

$$\cancel{\cos^2 x-\sin^2 x}\;-1$$

ص