نام و نام خانوادگی .....امین مرتضوی..... پاسخنامه تشریحی تکلیف شماره ۳..... کلاس .....11A.....

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

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$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}$$

$0^+$: $\frac{1-3x-(3x+1)}{x}=\frac{-6x}{x}=-6$

$0^-$: $\frac{1-3x-(3x+1)}{x}=\frac{-6x}{x}=-6$

۳

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

۴

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

$$\frac{2}{7\times 4}=\frac{1}{14}$$

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$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}=\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{1+\sqrt{x}}{1+\sqrt{x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}=\frac{1-x}{x-1}\times\frac{2+\sqrt{5-x}}{1+\sqrt{x}}=-2$$

۶

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}=\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\times\frac{2}{2}\times\frac{ف}{ف}=\frac{3x+4-16}{5x+7-27}\times\frac{27}{18}=\frac{3x-12}{5x-20}\times\frac{27}{14}=\frac{81}{40}$$

$$3(x-4),\quad 5(x-4)$$

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$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}=\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\times\frac{2}{2}\times\frac{ف}{ف}=\frac{3x+\sqrt{x}-4}{x-1}\times\frac{3}{4}=\frac{(\sqrt{x}-1)(3\sqrt{x}+4)}{(\sqrt{x}-1)(\sqrt{x}+2)}\times\frac{3}{4}$$

$$\frac{3\sqrt{x}+4}{\sqrt{x}+2}\times\frac{3}{4}=\frac{21}{8}$$

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

$$(1+\cos x)(1-\cos x)$$

۹

$$1+\tan x=\frac{\cos x-\sin x}{\cos x}$$

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

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

$$-1$$