نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۳۰ کلاس یازدهم ریاضی .....

(۲۰)

۱

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

$$\to \frac{(x-1)(4x-3)}{(x-1)(5x-3)}=\frac{4x-3}{5x-3}=\frac{4(1)-3}{5(1)-3}=\boxed{\frac{1}{2}}$$

(۲)

۲

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

(۲)

$$\to \frac{-(3x-1)-(3x+1)}{x}=\frac{-6x}{x}=\boxed{-6}$$

۳

$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}$$

(۲)

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

۴

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}$$

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

(۲)

$$\frac{2}{(2(2)+3)(2+\sqrt{4})}=\boxed{\frac{1}{14}}$$

۵

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\rightsquigarrow \times\frac{1+\sqrt{x}}{1+\sqrt{x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}\Rightarrow\frac{(1-x)(2+\sqrt{5-x})}{\underbrace{(4-5+x)}_{x-1}(1+\sqrt{x})}\Rightarrow$$

(۲)

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

۶

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\xrightarrow{\text{hop}}\frac{\frac{3}{2\sqrt{3x+4}}}{\frac{5}{3\sqrt[3]{(5x+7)^2}}}=\frac{\frac{3}{2\sqrt{16}}}{\frac{5}{3\sqrt[3]{(27)^2}}}=\frac{\frac{3}{8}}{\frac{5}{27}}=\boxed{\frac{81}{40}}$$

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$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\xrightarrow{\text{hop}}\frac{3+\frac{1}{2\sqrt{x}}}{\frac{1}{3\sqrt[3]{x^2}}}\Big/\ 2\sqrt{3x+\sqrt{x}}=\frac{\frac{7}{2}}{\frac{1}{3}}=\boxed{\frac{21}{8}}$$

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

$$\longrightarrow\frac{(1+\cos x)(1-\cos x+\cos^2 x)}{(1-\cos x)(1+\cos x)}=\frac{1-\cos x+\cos^2 x}{1-\cos x}\xrightarrow{\cos\pi=-1}\boxed{\frac{3}{2}}$$

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

$$\longrightarrow\frac{-1}{\cos x}\xrightarrow{x=\frac{\pi}{4}}\frac{-1}{\frac{\sqrt{2}}{2}}=\frac{-2}{\sqrt{2}}=\boxed{-\sqrt{2}}$$

۱۰

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

$$\longrightarrow\frac{-1}{\cos^2 x}\xrightarrow{x=\frac{3\pi}{4}}\frac{-1}{\left(-\frac{\sqrt{2}}{2}\right)^2}=\frac{-1}{\frac{2}{4}}=\boxed{-2}$$