نام و نام خانوادگی ......الناهیت ابهری...... ۲۰ ...... پاسخنامه تشریحی تکلیف شماره ...۳۰... کلاس ...یازدهم [illegible] A...........

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

$$\begin{array}{l|l} 4x^2-7x+3 & x-1 \\ -(4x^2-4x) & 4x-3 \\ \hline -3x+3 & \\ -(-3x+3) & \\ \hline 0 & \end{array}
\qquad
\begin{array}{l|l} 5x^2-8x+3 & x-1 \\ -(5x^2-5x) & 5x-3 \\ \hline -3x+3 & \\ -(-3x+3) & \\ \hline & \end{array}$$

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$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}=\lim_{x\to 0}\frac{-(3x-1)-3x-1}{x}=\lim_{x\to 0}\frac{-6\cancel{x}}{\cancel{x}}=-6$$

$x\to 0 \Rightarrow 3x-1<0$

$x\to 0 \Rightarrow 3x+1>0$

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$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}=\frac{0}{0}\Rightarrow \lim_{x\to 4}\frac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}}=\lim_{x\to 4}(\sqrt{x}+2)=4$$

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$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}=\frac{0}{0}\Rightarrow \lim_{x\to 2}\frac{x-\sqrt{2x}}{(x-2)(2x+3)}\times\frac{x+\sqrt{2x}}{x+\sqrt{2x}}=\frac{x^2-2x}{(x-2)(2x+3)4}\Rightarrow \lim_{x\to 2}\frac{x\cancel{(x-2)}}{\cancel{(x-2)}(2x+3)(4)}$$

$$=\lim_{x\to 2}\frac{x}{(2x+3)(4)}=\frac{2}{28}=\frac{1}{14}$$

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$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}=\frac{0}{0}\xrightarrow{\times\ \text{مزدوج}}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}=\frac{(1-\sqrt{x})(4)}{\underbrace{4-5+x}_{x-1}}\Rightarrow$$

$$\lim_{x\to 1}\frac{(1-\sqrt{x})(4)}{(x-1)}=\lim_{x\to 1}\frac{\overset{-1}{\cancel{(1-\sqrt{x})}}(4)}{\cancel{(\sqrt{x}-1)}(\sqrt{x}+1)}=\lim_{x\to 1}\frac{-4}{(1+\sqrt{x})}=-2$$

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$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\times\frac{\sqrt{3x+4}+4}{\sqrt{3x+4}+4}\times\frac{\sqrt[3]{(5x+7)^2}+3\sqrt[3]{5x+7}+9}{\sqrt[3]{(5x+7)^2}+3\sqrt[3]{5x+7}+9}=\frac{3x+4-16}{5x+7-27}\times\frac{27}{8}=\frac{3x-12}{5x-20}\times\frac{27}{8}$$

$$=\frac{3\cancel{(x-4)}}{5\cancel{(x-4)}}\times\frac{27}{8}=\frac{81}{40}$$

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$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}=\frac{0}{0}\Rightarrow\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\times\frac{\sqrt{3x+\sqrt{x}}+2}{\sqrt{3x+\sqrt{x}}+2}\times\frac{\sqrt[3]{x^2}+\sqrt[3]{x}+1}{\sqrt[3]{x^2}+\sqrt[3]{x}+1}=$$

$$\frac{3x+\sqrt{x}-4}{x-1}\times\frac{3}{4}\xrightarrow{\text{hoP}}\lim_{x\to 1}\frac{3+\frac{1}{2\sqrt{x}}}{1}\times\frac{3}{4}=\frac{21}{8}$$

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$$\lim_{x\to\pi}\frac{1+\cos^3 x}{\sin^2 x}=\frac{0}{0}\Rightarrow\lim_{x\to\pi}\frac{(1+\cos x)(1-\cos x+\cos^2 x)}{1-\cos^2 x}=\lim_{x\to\pi}\frac{\cancel{(1+\cos x)}(1-\cos x+\cos^2 x)}{(1-\cos x)\cancel{(1+\cos x)}}$$

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

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$$\lim_{x\to\frac{\pi}{4}}\frac{1-\tan x}{\sin x-\cos x}=\frac{0}{0}=\lim_{x\to\frac{\pi}{4}}\frac{1-\frac{\sin x}{\cos x}}{\sin x-\cos x}=\lim_{x\to\frac{\pi}{4}}\frac{\frac{\overset{-1}{\cancel{\cos x-\sin x}}}{\cos x}}{\cancel{\sin x-\cos x}}=\lim_{x\to\frac{\pi}{4}}\frac{-1}{\cos x}=\frac{-1}{\frac{\sqrt{2}}{2}}=\frac{-2}{\sqrt{2}}$$

$$\to\frac{-2}{\sqrt{2}}\times\frac{\sqrt{2}}{\sqrt{2}}=-\sqrt{2}$$

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$$\lim_{x\to\frac{3\pi}{4}}\frac{\tan^2 x-1}{\cos 2x}=\frac{0}{0}=\lim_{x\to\frac{3\pi}{4}}\frac{\frac{\sin^2 x}{\cos^2 x}-1}{\cos^2 x-\sin^2 x}=\lim_{x\to\frac{3\pi}{4}}\frac{\frac{\overset{-1}{\cancel{\sin^2 x-\cos^2 x}}}{\cos^2 x}}{\cancel{\cos^2 x-\sin^2 x}}=\lim_{x\to\frac{3\pi}{4}}\frac{-1}{\cos^2 x}=\frac{-1}{\frac{1}{2}}=-2$$