نام و نام خانوادگی ماهان بابایی پاسخنامه تشریحی تکلیف شماره ۳ کلاس یازدهم تجربی ۵

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$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3}=\frac{0}{0}\xrightarrow{\text{مبهم!}}\text{رفع ابهام}$$

$$\lim\frac{\cancel{(x-1)}\,4\left(x-\frac{3}{4}\right)}{\cancel{(x-1)}\,5\left(x-\frac{3}{5}\right)}\ \overset{\text{if } x=1}{\Rightarrow}\ \frac{4\left(\frac{1}{4}\right)}{5\times\frac{2}{5}}=\frac{1}{2}$$

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$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}=\frac{0}{0}\ \text{رفع ابهام}$$

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

$$\lim_{x\to 0^-}\frac{-3x+1-3x-1}{x}=-6$$

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$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}=\frac{0}{0}\to\text{رفع ابهام}$$

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

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$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}=\frac{0}{0}\ \text{رفع ابهام}\ \lim_{x\to 2}\frac{\sqrt{x}\left(\sqrt{x}-\sqrt{2}\right)}{(x-2)(2x+3)}=\frac{\sqrt{x}\left(\cancel{\sqrt{x}-\sqrt{2}}\right)}{\left(\cancel{\sqrt{x}-\sqrt{2}}\right)\left(\sqrt{x}+\sqrt{2}\right)(2x+3)}$$

$$\lim_{x\to 2}\frac{\sqrt{x}}{\left(\sqrt{x}+\sqrt{2}\right)(2x+3)}=\frac{\sqrt{2}}{\left(\sqrt{2}+\sqrt{2}\right)(7)}=\frac{\cancel{\sqrt{2}}}{2\cancel{\sqrt{2}}\times 7}=\frac{1}{14}$$

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$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}=\frac{0}{0}\ \text{رفع ابهام}$$

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{1+\sqrt{x}}{1+\sqrt{x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}=\frac{\overset{-1}{\cancel{(1-x)}}\left(2+\sqrt{5-x}\right)}{\underset{\cancel{(-1+x)}}{(4-5+x)}\left(1+\sqrt{x}\right)}\xrightarrow{x=1}\frac{-1\times(\overset{4}{\cancel{2+2}})}{2}$$

-2

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$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}=\frac{0}{0}\to \text{رفع ابهام}$$

$$\times\frac{\text{مزدوج}}{\text{مزدوج}}\times\frac{\text{مزدوج}}{\text{مزدوج}}=\lim_{x\to 4}\frac{3x+4-16}{5x+7-27}\times\frac{27}{8}$$

$$\lim_{x\to 4}\frac{\overset{3(x-4)}{(3x-12)}}{\underset{5(x-4)}{(5x-20)}}\times\frac{27}{8}=\frac{81}{40}$$

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$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\times\frac{\text{مزدوج}}{\text{مزدوج}}\times\frac{\text{مزدوج}}{\text{مزدوج}}=\frac{3x+\sqrt{x}-4}{x-1}\times\frac{3}{4}=\frac{9x+3\sqrt{x}-12}{4x-4}$$

رفع ابهام

$$\xrightarrow{H.P}\ \frac{9+\frac{3}{2\sqrt{x}}}{4}\ \xrightarrow{\text{if } x=1}\ \frac{9+\frac{3}{2}}{4}=\frac{21}{8}$$

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$$\lim_{x\to\pi}\frac{1+\cos^3x}{\sin^2x}=\frac{0}{0}\to\text{رفع ابهام}\quad \lim_{x\to\pi}\frac{\cancel{(1+\cos x)}(1+\cos^2x-\cos x)}{\cancel{\sin^2x}}\times\frac{\cancel{(1-\cos x)}}{(1-\cos x)}$$

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

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$$\lim_{x\to\frac{\pi}{4}}\frac{1-\tan x}{\sin x-\cos x}=\frac{0}{0}\to\text{رفع ابهام}\quad\frac{1-\frac{\sin x}{\cos x}}{\sin x-\cos x}=\frac{\frac{\cancel{(\cos x-\sin x)}-1}{\cos x}}{\cancel{(\sin x-\cos x)}}=\frac{-1}{\cos x}$$

$$\frac{-1}{\frac{\sqrt{2}}{2}}=\frac{-2}{\sqrt{2}}\times\frac{\sqrt{2}}{\sqrt{2}}=-\sqrt{2}$$

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$$\lim_{x\to\frac{3\pi}{4}}\frac{\tan^2x-1}{\cos 2x}=\frac{0}{0}\to\text{رفع ابهام}\quad\frac{\frac{\sin^2x}{\cos^2x}-1}{\cos^2x-\sin^2x}=\frac{\frac{\cancel{(\sin^2x-\cos^2x)}-1}{\cos^2x}}{\cancel{(\cos^2x-\sin^2x)}}=\frac{-1}{\cos^2x}$$

$$\frac{-1}{\underset{\frac{1}{2}}{\left(-\frac{\sqrt{2}}{2}\right)^2}}=-2$$