نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3} \Rightarrow \frac{x^2-7x+12}{x^2-8x+15} = \frac{(4x-3)(x-1)}{(5x-3)(x-1)} = \frac{4x-3}{5x-3} = \frac{1}{2}$$

رفع ابهام

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

رفع ابهام

۳

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

رفع ابهام

۴

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6} = \frac{x-\sqrt{2x}}{(x-2)(2x+3)}\times\frac{x+\sqrt{2x}}{x+\sqrt{2x}} = \frac{x(x-2)}{(x-2)(2x+3)(x+\sqrt{2x})} = \frac{2}{28} = \frac{1}{14}$$

رفع ابهام

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

رفع ابهام

۶

$$\lim_{x\to 4} \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \times \frac{5}{5} \times \frac{\sqrt{}}{\sqrt{}} = \frac{3(x-4)\left(\sqrt[3]{(5x+7)^2}+3\sqrt[3]{5x+7}+9\right)}{5(x-4)\left(\sqrt{3x+4}+4\right)} \xrightarrow{\text{رفع ابهام}} \frac{18}{20}$$

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

$$= \frac{2x+\sqrt{x}-4}{x-1} \times \frac{\sqrt[3]{x^2}+\sqrt[3]{x}+1}{\sqrt{2x+\sqrt{x}}+2} \Rightarrow \frac{3\left(3(\sqrt{x}-1)\left(\sqrt{x}+\frac{4}{3}\right)\right)}{4(\sqrt{x}-1)(\sqrt{x}+1)} \xrightarrow{x=1} \frac{21}{8}$$

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

$\downarrow 2$

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

$\xrightarrow{\text{رفع ابهام}}$

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$$\lim_{x\to \frac{3\pi}{4}} \frac{\tan^2 x-1}{\cos^2 x} \xrightarrow{\text{رفع ابهام}} \frac{(\tan+1)(\tan-1)}{(\cos-\sin)(\sin+\cos)} = \frac{-\frac{(\sin+\cos)}{\cos}\left(\frac{\cos-\sin}{\cos}\right)}{(\cos-\sin)(\sin+\cos)}$$

$$= -\frac{1}{\cos^2} = -\frac{1}{\frac{1}{2}} = -2$$