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

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

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

حدود

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

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

۳

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

۴

$$\lim_{x\to 2}\frac{x-\sqrt{3x}}{2x^2-x-6}=\frac{\sqrt{x}(\sqrt{x}-\sqrt{3})}{(x-2)(2x+3)}=\frac{\sqrt{x}}{(\sqrt{x}+\sqrt{3})(2x+3)}=\frac{\sqrt{2}}{4\sqrt{2}\times 7}=\frac{\sqrt{2}}{14\sqrt{2}}=\boxed{\frac{1}{14}}$$

$$(\sqrt{x}-\sqrt{3})(\sqrt{x}+\sqrt{3})$$

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$$\lim\frac{1-\sqrt{x}}{x-3\sqrt{x}-2}\times\frac{1+\sqrt{x}}{1+\sqrt{x}}\times\frac{4}{4+\sqrt{3x-x}}=\frac{4(1-x)}{(x+3\sqrt{x}-2)(1)}=\frac{4(1-x)}{-(1-x)(x+2)}=\frac{4}{-3}=\boxed{-2}$$

۶

$$\lim_{x\to 2} \frac{\sqrt{3x+2}-4}{\sqrt[3]{x^2+x-2}} \times \frac{\sqrt{3x+2}+4}{8} \times \frac{27}{\sqrt[3]{(x^2+x-2)^2}+4\sqrt[3]{x^2+x-2}+16} = \frac{3x-12}{x^2+x-6} \times \frac{27}{8} = \frac{3}{x+3} \times \frac{27}{8} = \frac{81}{40}$$

۷

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

$$= \frac{3\left[4(\sqrt{x}-1)(\sqrt{x}+\frac{4}{3})\right]}{4(\sqrt{x}-1)(\sqrt{x}+1)} = \frac{7}{8}$$

۸

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

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

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