نام و نام خانوادگی ..... شادی ترابی ..... پاسخنامه تشریحی تکلیف شماره ..... ۳۰ ..... کلاس ..... یازدهم دختر B .....

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

۲

$$\lim_{x\to 0}\frac{\overbrace{|2x-1|}^{\ominus}-\overbrace{|3x+1|}^{\oplus}}{x}=\frac{1-2x-3x-1}{x}=\frac{-6x}{x}=\boxed{-6}$$

۳

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

۴

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

($\sqrt{2}+\sqrt{2}=2\sqrt{2}$)

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$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{22}{22}\times\frac{\text{ص}2}{\text{ص}2}=\frac{5(1-x)}{2(4-5+x)}=\frac{(-2)(x-1)}{x-1}=\boxed{-2}$$

۶

$$\lim_{x\to 4} \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \times \frac{\text{ف}\,3}{\text{ف}\,2} \times \frac{\text{ص}\,2}{\text{ص}\,1} = \frac{27(3x+4-16)}{8(5x+7-27)} = \frac{27\times 3(x-4)}{8\times 5(x-4)} = \boxed{\frac{81}{40}}$$

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$$\lim_{x\to 1} \frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \times \frac{\text{ف}\,3}{\text{ف}\,2} \times \frac{\text{ص}\,2}{\text{ص}\,3} = \frac{3(3x+\sqrt{x}-4)}{4(x-1)} = \frac{3(\sqrt{x}-1)(3\sqrt{x}+4)}{4(\sqrt{x}-1)(\sqrt{x}+1)} = \frac{3\times(3+4)}{4\times(1+1)} = \boxed{\frac{21}{8}}$$

۸

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

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

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$$\lim_{x\to\frac{3\pi}{4}} \frac{\tan^2 x-1}{\cos 2x} = \frac{\frac{\sin^2 x}{\cos^2 x}-\frac{\cos^2 x}{\cos^2 x}}{\cos 2x} = \frac{\frac{-(\cos^2 x-\sin^2 x)}{\cos^2 x}}{\cos 2x} = -\frac{1}{\cos^2 x} = -\frac{1}{\left(-\frac{\sqrt{2}}{2}\right)^2} = \boxed{-2}$$