نام و نام خانوادگی: سید آرین میرطاهری پاسخنامه تشریحی تکلیف شماره ۳ کلاس چهارشنبه

$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3} \Rightarrow \frac{\cancel{(x-1)}(4x-3)}{\cancel{(x-1)}(5x-3)} = \frac{4x-3}{5x-3} = \boxed{\frac{1}{2}}$$ ۱

$$x\to 0 \Rightarrow 3x-1<0 \Rightarrow \frac{-(3x-1)-3x-1}{x} = \frac{-6x}{x} = \boxed{-6}$$ ۲

$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2} \Rightarrow \frac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}} = \sqrt{x}+2 = \boxed{4}$$ ۳

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{(x-2)(2x+3)} \to \times\frac{\text{مز}}{\text{مز}} \to \frac{x^2-2x}{(x-2)(2x+3)}\times\frac{1}{4}$$

$$\to \frac{x\cancel{(x-2)}}{4\cancel{(x-2)}(2x+3)} = \frac{2}{28} = \boxed{\frac{1}{14}}$$ ۴

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}} \to \times\frac{\cancel{\text{مز}}}{\text{مز}}\times\frac{\text{مز}}{\cancel{\text{مز}}} \to \frac{1-x}{4-5+x}\times\frac{1}{2}\times 4 = \boxed{-2}$$ ۵

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\longrightarrow \times\frac{\cancel{\text{مص}}}{\text{مص}}\times\frac{\text{فم}}{\cancel{\text{فم}}}\longrightarrow \frac{3x-12}{5x-20}\times\frac{3\alpha^2}{2\alpha}=\frac{3}{5}\times\frac{27}{8}=\frac{81}{40}$$

$$\boxed{\frac{81}{40}}$$

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$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\longrightarrow\times\frac{\cancel{\text{مص}}}{\text{مص}}\times\frac{\text{فم}}{\text{فم}}\longrightarrow\frac{3x+\sqrt{x}-4}{x-1}\times\frac{3}{4}$$

$$\longrightarrow\left(\frac{3x-3}{x-1}+\frac{(\cancel{\sqrt{x}-1})}{(\cancel{\sqrt{x}-1})(\sqrt{x}+1)}\right)\times\frac{3}{4}=\frac{7}{2}\times\frac{3}{4}=\boxed{\frac{21}{8}}$$

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$$\longrightarrow\frac{\cos^2x+\sin^2x+\cos^3x}{\sin^2x}\Rightarrow\frac{\cos^2x(1+\cos x)}{1-\cos^2x}+\frac{\sin^2x}{\sin^2x}$$

$$\longrightarrow\frac{\cos^2x}{1-\cos x}+1\longrightarrow\frac{(-1)^2}{1-(-1)}+1=\boxed{\frac{3}{2}}$$

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$$\frac{1-\tan x}{\sin x-\cos x}\times\frac{\cancel{\text{مص}}}{\text{مص}}\times\frac{\text{مم}}{\cancel{\text{مم}}}=\frac{1-\tan^2x}{\sin^2x-\cos^2x}\times\frac{2}{\sqrt{2}}$$

$$\longrightarrow\frac{2(1-\tan^2x)}{-\sqrt{2}(\cos 2x)}=\frac{2(\cancel{1-\tan^2x})}{\dfrac{\sqrt{2}(\cancel{1-\tan^2x})}{-(1+\tan^2x)}}=\frac{-2(1+\tan^2x)}{\sqrt{2}}=\frac{-2}{\sqrt{2}}\longrightarrow\boxed{-\sqrt{2}}$$

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$$\tan^2x=\frac{1-\cos 2x}{1+\cos 2x}\Longrightarrow\frac{\dfrac{1-\cos 2x}{1+\cos 2x}-1}{\cos 2x}=\frac{\dfrac{-2\cos 2x}{1+\cos 2x}}{\cos 2x}$$

$$\longrightarrow\cos 2x=t\Rightarrow\frac{\dfrac{-2t}{1+t}}{t}=\frac{-2\cancel{t}}{\cancel{t}(t+1)}=\frac{-2}{t+1}\longrightarrow\frac{-2}{0+1}=\boxed{-2}$$

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