نام و نام خانوادگی ......ملیکا کریمی...... پاسخنامه تشریحی تکلیف شماره ...۳۰... کلاس ...یازدهم تجربی...

$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 1}\frac{\cancel{(x-1)}(4x-3)}{\cancel{(x-1)}(5x-3)}=\frac{4-3}{5-3}=\frac{1}{2}$$ ۱

$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}=\frac{-3x+1-(3x+1)}{x}=\frac{-6\cancel{x}}{\cancel{x}}=-6$$ ۲

$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 4}\frac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}}=\lim_{x\to 4}\sqrt{x}+2=2+2=\boxed{4}$$ ۳

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}\times\frac{x+\sqrt{2x}}{\underbrace{x+\sqrt{2x}}_{2+2=4}}=\lim_{x\to 2}\frac{x^2-2x}{2x^2-x-6}\times\frac{1}{4}$$

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

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{1+\sqrt{x}}{\underbrace{1+\sqrt{x}}_{1+1=2}}\times\frac{\overbrace{2+\sqrt{5-x}}^{2+2=4}}{2+\sqrt{5-x}}$$

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

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\times\frac{\overbrace{(\sqrt[3]{5x+7})^2+9+3\sqrt[3]{5x+7}}^{27}}{(\sqrt[3]{5x+7})^2+9+3\sqrt[3]{5x+7}}\times\frac{\sqrt{3x+4}+4}{\underbrace{\sqrt{3x+4}+4}_{8}}$$

$$=\lim_{x\to 4}\frac{3x+4-16}{5x+7-27}\times\frac{27}{8}=\lim_{x\to 4}\frac{3(x-4)}{5(x-4)}\times\frac{27}{8}=\boxed{\frac{81}{40}}$$ ۶

$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\times\frac{\sqrt{3x+\sqrt{x}}+2}{\underbrace{\sqrt{3x+\sqrt{x}}+2}_{4}}\times\frac{\overbrace{\sqrt[3]{x^2}+1+\sqrt[3]{x}}^{3}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}}$$

$$=\lim_{x\to 1}\frac{3x+\sqrt{x}-4}{x-1}\times\frac{3}{4}=\lim_{x\to 1}\frac{(\sqrt{x}-1)(3\sqrt{x}+4)}{(\sqrt{x}-1)(\sqrt{x}+1)}\times\frac{3}{4}=\frac{3+4}{1+1}\times\frac{3}{4}=\frac{21}{8}$$ ۷

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

$$=\lim_{x\to \pi}\frac{1+\cos^2 x-\cos x}{1-\cos x}=\frac{1+(-1)^2-(-1)}{1-(-1)}=\frac{3}{2}$$ ۸

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

$$=\lim_{x\to \frac{\pi}{4}}\frac{-1}{\cos x}=\frac{-1}{\frac{\sqrt{2}}{2}}=\boxed{-\sqrt{2}}$$ ۹

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

$$=\lim_{x\to \frac{3\pi}{4}}\frac{-1}{\cos^2 x}=\frac{-1}{\left(-\frac{\sqrt{2}}{2}\right)^2}=\boxed{-2}$$ ۱۰