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

۱	$\lim\limits_{x\to 1}\dfrac{4x^2-7x+3}{5x^2-8x+3}=\dfrac{0}{0}\to$ مبهم $\quad \dfrac{4x^2-7x+3}{5x^2-8x+3}=\dfrac{\cancel{(x-1)}(4x-3)}{\cancel{(x-1)}(5x-3)}=\dfrac{4x-3}{5x-3}$ $x=1\to\dfrac{4-3}{5-3}=\dfrac{1}{2}\to$ $\boxed{\dfrac{1}{2}}=$ حاصل حد
۲	$\lim\limits_{x\to 0}\dfrac{\lvert 3x-1\rvert-\lvert 3x+1\rvert}{x}\to\dfrac{0}{0}\to$ مبهم $0^+=\dfrac{-3x+1-3x-1}{x}=\dfrac{-6x}{x}=-6$ $0^-=\dfrac{-3x+1-3x-1}{x}=\dfrac{-6x}{x}=-6$ پس حد وجود دارد حاصل حد $=\boxed{-6}$
۳	$\lim\limits_{x\to 4}\dfrac{x-4}{\sqrt{x}-2}\to\dfrac{0}{0}\to$ مبهم $\quad x-4=(\sqrt{x}-2)(\sqrt{x}+2)\to\dfrac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}}=\sqrt{x}+2$ $\sqrt{x}+2\to x=4=\sqrt{4}+2=\boxed{4}$
۴	$\lim\limits_{x\to 2}\dfrac{x-\sqrt{2x}}{2x^2-x-6}\to\dfrac{0}{0}\to$ مبهم $\to hop\to\dfrac{1-\dfrac{2}{2\sqrt{2x}}}{4x-1}\to x=2=\dfrac{1-\dfrac{1}{2}}{7}=\dfrac{\frac{1}{2}}{7}=\dfrac{1}{14}$ $\boxed{\dfrac{1}{14}}=$ حاصل حد
۵	$\lim\limits_{x\to 1}\dfrac{1-\sqrt{x}}{2-\sqrt{5-x}}\to\dfrac{0}{0}\to$ مبهم $\quad \dfrac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\dfrac{\text{مزدوج}}{\text{مزدوج}}\times\dfrac{\text{؟}}{\text{؟}}=\dfrac{(1-x)(4)}{(4-5+x)(2)}=\dfrac{(1-x)(2)}{(x-1)}$ $2\times2=4$ $\quad (1+\sqrt{x})\quad (2+\sqrt{5-x})$ خلاصه کردم $\boxed{-2\to}$ حاصل حد

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3} \rightarrow \frac{0}{0} \rightarrow \text{رفع ابهام}\quad \frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\times\frac{\text{مزدوج ص}}{\text{مزدوج ص}}\times\frac{\text{ف م}}{\text{ف م}} = \frac{(3x+4-16)(27)}{(5x+7-27)(8)}$$

$$\frac{(3x-12)(27)}{(5x-20)(8)} = \frac{3\cancel{(x-4)}(27)}{5\cancel{(x-4)}(8)} = \boxed{\frac{81}{40}}$$

$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1} \rightarrow \frac{0}{0} \rightarrow \text{رفع ابهام}\quad \frac{\text{مزدوج}}{\text{مزدوج}}\times\frac{\text{ف م}}{\text{ف م}} = \frac{(3x+\sqrt{x}-4)(3)}{(x-1)(4)} =$$

۷

$$\frac{\cancel{(\sqrt{x}-1)}(3\sqrt{x}+4)(3)}{\cancel{(\sqrt{x}-1)}(\sqrt{x}+1)(4)} = \frac{(3+4)(3)}{(2)(4)} = \boxed{\frac{21}{8}} \rightarrow \text{حاصل حد}$$

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

۸

$$\frac{1+\cos^2 x-\cos x}{1-\cos x} = \frac{1+1+1}{1-(-1)} = \underbrace{\frac{3}{2} \rightarrow \text{حاصل حد}}$$

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

۹

$$\cos\frac{\pi}{4} = \frac{\sqrt{2}}{2} \rightarrow \frac{-1}{\cos\frac{\pi}{4}} = -\frac{2}{\sqrt{2}} = \boxed{-\sqrt{2}}$$

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

۱۰

$$\frac{-1}{\cos^2 x} = \frac{-1}{\cos^2\frac{3\pi}{4}} = \frac{-1}{\frac{2}{4}} = \boxed{-2}$$