نام و نام خانوادگی ...[illegible]... پاسخنامه تشریحی تکلیف شماره ...۳... کلاس ...یازدهم...

۱	$\lim_{x\to 1} \frac{4x^2-7x+3}{5x^2-8x+3} = \frac{0}{0} \xrightarrow[\text{hop}]{\text{رفع ابهام}} \frac{8x-7}{10x-8} = \frac{8-7}{10-8} = \boxed{\frac{1}{2}}$
۲	$\lim_{x\to 0} \frac{\lvert 3x-1\rvert - \lvert 3x+1\rvert}{x} = \frac{1-3x-3x-1}{x} = \frac{-6x}{x} = \boxed{-6}$
۳	$\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} = \frac{0}{0} \xrightarrow{\text{رفع ابهام}} \frac{(\sqrt{x}-2)(\sqrt{x}+2)}{\sqrt{x}-2} = \sqrt{x}+2 = \boxed{4}$
۴	$\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-6} = \frac{0}{0} \xrightarrow{\text{رفع ابهام}} \frac{x^2-2x}{(2x^2-x-6)\times 4} = \frac{x(x-2)}{(x-2)(2x+3)\times 4} = \frac{2}{28} = \boxed{\frac{1}{14}}$
۵	$\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} = \frac{0}{0} \xrightarrow[\text{hop}]{\text{رفع ابهام}} \frac{-\frac{1}{2\sqrt{x}}}{-\frac{-1}{2\sqrt{5-x}}} = \frac{-\frac{1}{2}}{\frac{1}{4}} = \boxed{-2}$

۶

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}=\frac{0}{0}\xrightarrow{\text{رفع ابهام}}\frac{3x+4-16}{5x+7-27}\times\frac{27}{8}=\frac{3(x-4)}{5(x-4)}\times\frac{27}{8}=\boxed{\frac{81}{40}}$$

۷

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

$$=\frac{7\times 3}{2\times 4}=\boxed{\frac{21}{8}}$$

۸

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

۹

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

$$=\frac{-1}{\frac{\sqrt{2}}{2}}=\boxed{-\sqrt{2}}$$

۱۰

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