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نام و نام خانوادگی ......هستی حیاتی...... پاسخنامه تشریحی تکلیف شماره ...۲... کلاس ...یازدهم دهم A...

۱)

$$\lim_{x\to 1}\frac{4x^2-7x+3}{5x^2-8x+3} : \frac{4(1)^2-7(1)+3}{5(1)^2-8(1)+3}=\frac{0}{0}\xrightarrow{hop}\frac{8x-7}{10x-8}=\frac{8-7}{10-8}=\frac{1}{2}$$

۲)

$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x} : \frac{-(3x-1)-(3x+1)}{x}=\frac{-3x+1-3x-1}{x}=\frac{-6x}{x}=-6$$

۳)

$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2} : \frac{0}{0}\xrightarrow{hop}\frac{1}{\frac{1}{2\sqrt{x}}}=2\sqrt{x}=2\times\sqrt{4}=4$$

۴)

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6} : \frac{0}{0}\xrightarrow{hop}\frac{1-\frac{2}{2\sqrt{2x}}}{4x-1}=\frac{1-\frac{2}{2\sqrt{4}}}{8-1}=\frac{1-\frac{1}{2}}{7}=\frac{1}{14}$$

۵)

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}} : \frac{0}{0}\xrightarrow{hop}\frac{\frac{-1}{2\sqrt{x}}}{\frac{-(-1)}{2\sqrt{5-x}}}=\frac{-1/2}{1/4}=-2$$

٦) $\lim_{x\to 4} \frac{\sqrt{3x+4}-\sqrt{x}}{\sqrt[3]{2x+7}-3} : \frac{0}{0} \to \times\frac{2}{2} \times \frac{\sqrt{}+\sqrt{}}{\sqrt{}+\sqrt{}} \Rightarrow \frac{(3x+4-x)}{(2x+7-27)} \times \frac{1}{8} \times \frac{27}{1} = \frac{0}{0} \xrightarrow{\text{hop}} \frac{27}{8} \times \frac{3}{3} = \frac{81}{4}$

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

$\Rightarrow \frac{3}{4} \times \frac{3+\frac{1}{2\sqrt{x}}}{1} = \frac{3 \times 7}{4 \times 2} = \frac{21}{8}$

٨) $\lim_{x\to\pi} \frac{1+\cos^3 x}{\sin^2 x} : \frac{0}{0} \to \frac{(1+\cos x)(1-\cos x+\cos^2 x)}{(1+\cos x)(1-\cos x)} = \frac{1-(-1)+1}{1-(-1)} = \frac{3}{2}$

$\sin^2 x = 1-\cos^2 x$

٩) $\lim_{x\to \frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} : \frac{0}{0} \to \frac{(\cos x-\sin x)(-1)}{\cos x(\sin x-\cos x)} = \frac{-1}{\cos x} = \frac{-2}{\sqrt{2}} = -\sqrt{2}$

١٠) $\lim_{x\to \frac{3\pi}{4}} \frac{\tan^2 x-1}{\cos 2x} : \frac{0}{0} \to \frac{(\tan x-1)(\tan x+1)}{(\cos x-\sin x)(\cos x+\sin x)} = \frac{-1(\sin x-\cos x)(\sin x+\cos x)\times 1}{\cos x^2 \times (\cos x-\sin x)(\cos x+\sin x)} = \frac{-1}{\cos^2 x} = \frac{-1}{\frac{1}{2}} = -2$

$\cos 2x = \cos^2 x - \sin^2 x$