لینا ابراهیمی یازدهم گروه دکتر C

1_

$$\lim_{x\to1}\frac{4x^2-7x+3}{5x^2-8x+3}=\frac{0}{0}\longrightarrow\frac{\cancel{(x-1)}(4x-3)}{\cancel{(x-1)}(5x-3)}=\frac{1}{2}$$

2_

$$\lim_{x\to0}\frac{|3x-1|-|3x+1|}{x}=\frac{1-3x-3a-1}{x}=\frac{-6x}{x}=-6$$

3_

$$\lim_{x\to4}\frac{x-4}{\sqrt{x}-2}=\frac{0}{0}\longrightarrow\frac{\cancel{(\sqrt{x}-2)}(\sqrt{x}+2)}{\cancel{(\sqrt{x}-2)}}=\sqrt{x}+2=4$$

4_

$$\lim_{x\to2}\frac{x-\sqrt{2x}}{2x^2-x-6}=\frac{0}{0}\longrightarrow\frac{\sqrt{x}\,\cancel{(\sqrt{x}-\sqrt{2})}}{\underbrace{(x-2)}_{\cancel{(\sqrt{x}-\sqrt{2})}(\sqrt{x}+\sqrt{2})}(2x+3)}=\frac{\sqrt{x}}{(\sqrt{x}+2)(2x+3)}=\frac{1}{14}$$

5_

$$\lim_{x\to1}\frac{\overbrace{1-\sqrt{x}}^{1-x}}{\underbrace{2-\sqrt{5-x}}_{4-5+x}}=\frac{0}{0}\longrightarrow 2\;\frac{\text{مم}}{\text{مم}}\times\frac{\text{مص}}{\text{مص}}\longrightarrow 2a=2\longrightarrow a=1$$

$$=\frac{1-x}{x-1}\times\frac{4}{2}=-2$$

6_

$$\lim_{x\to4}\frac{\overbrace{\sqrt{3x+4}-4}^{3x+4-16}}{\underbrace{\sqrt[3]{5x+7}-3}_{5x+7-27}}\times\frac{\text{مص}}{\text{مص}}\times\frac{\text{فم}}{\text{فم}}\qquad\frac{\overbrace{3x-12}^{3(x-4)}}{\underbrace{5x-20}_{5(x-4)}}\times\frac{27}{8}=\frac{81}{40}$$

7_

$$\lim\frac{\overbrace{\sqrt{3x+\sqrt{x}}-2}^{3x+\sqrt{x}-4}}{\sqrt[3]{x}-1}\times\frac{\text{مص}}{\text{مص}}\times\underbrace{\frac{\text{فم}}{\text{فم}}}_{x-1}$$

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

$$\lim_{x \to \pi} \frac{1+\cos^3 x}{\underbrace{\sin^2 x}_{1-\sin^2 x}} = \frac{0}{0} \rightarrow \frac{\cancel{(1+\cos x)}(1+\cos^2 x - \cos x)}{(1-\cos x)\cancel{(1+\cos x)}}$$ ـ۸

$$x \to \pi = \frac{۳}{۲}$$

$$\lim_{x \to \frac{\pi}{4}} \frac{1-\tan x}{\sin x - \cos x} = \frac{0}{0} \rightarrow \frac{1-\frac{\sin x}{\cos x}}{\sin x - \cos x} = \frac{\frac{\cos - \sin x}{\cos x}}{\sin x - \cos x} = \frac{-1}{\cos x}$$ ـ۹

$$\rightarrow \frac{-1}{\frac{\sqrt{۲}}{۲}} = -\frac{\cancel{۲}}{\cancel{\sqrt{۲}}} \times \frac{\cancel{\sqrt{۲}}}{\cancel{\sqrt{۲}}} = -\sqrt{۲}$$

ـ۱۰

$$\lim \frac{\tan^2 x - 1}{\cos^2 x} = \frac{\frac{1-\cos^2 x - 1}{1+\cos^2 x}}{\cos^2 x} = \frac{-۲}{1+\cos^2 x} \rightarrow \frac{-۲}{1+۰} = -۲$$