(۸)

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

۵

$$\frac{1+1+1}{1-(-1)} = \frac{3}{2}$$

(۹)

$$\lim_{x\to\frac{\pi}{4}} \frac{1-\tan}{\sin x-\cos x} = \frac{\cos^2 x+\sin^2 x-\frac{\sin x}{\cos x}}{\sin x-\cos x}$$

۱/۷۵

$$\frac{\dfrac{\cos x(\cancel{\cos^2 x+\sin^2 x})-\sin x}{\cos x}}{\dfrac{\sin x-\cos x}{1}} = \frac{\cancel{(-\sin x+\cos x)}}{\cancel{(-\sin+\cos)}(\cos x)} = \frac{1}{\underbrace{\cos x}_{\frac{\pi}{4}}} \quad \frac{\sqrt{2}}{2}$$

$$=\sqrt{2}$$

(۱۰)

$$\lim \frac{\tan^2 x-1}{\cos^2 x}$$

۱/۵

$$\frac{\dfrac{\sin^2 x}{\cos^2 x}-1}{\cos^2 x} = \frac{\dfrac{\sin^2 x-\cos^2 x}{\cos^2 x}}{\cos^2 x-\sin^2 x} = \frac{-1}{\cancel{\cos^2 x}} \quad \frac{3\pi}{4} = \sqrt{2}$$

$$\frac{-\sqrt{2}}{2}$$

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

$\vee$ $\tau\kappa$ $2+2$

حد مهم است :

(۵

$$\lim_{x\to 1}\frac{1-\sqrt{x}}{2-\sqrt{5-x}}\times\frac{1+\sqrt{x}}{1+\sqrt{x}}\times\frac{2+\sqrt{5-x}}{2+\sqrt{5-x}}=$$

$$\frac{\cancel{(1-x)}\,(2+\sqrt{5-x})}{\underbrace{\cancel{(4-5+x)}}_{-(1-x)}(1+\sqrt{x})}=-\frac{4}{2}=-2$$

حد مهم است برابر است : (۴

(۴

$$\lim_{x\to 4}\frac{\sqrt{3x+4}-4}{\sqrt[3]{5x+7}-3}\times\frac{\sqrt{3x+4}+4}{\sqrt{3x+4}+4}\times\frac{\sqrt[3]{(5x+7)^2}+9+3\sqrt[3]{5x+7}}{\sqrt[3]{(5x+7)^2}+9+3\sqrt[3]{5x+7}}=$$

$$\frac{\overbrace{(3x+4-16)}^{3\cancel{(x-4)}}\times 27}{\underbrace{(5x+7-27)}_{(5x-20)=5\cancel{(x-4)}}(\sqrt{3x+4}+4)}=\frac{30}{40}=\frac{3}{4}$$

حد مهم است : (۷

$$\lim_{x\to 1}\frac{\sqrt{3x+\sqrt{x}}-2}{\sqrt[3]{x}-1}\times\frac{\sqrt{3x+\sqrt{x}}+2}{\sqrt{3x+\sqrt{x}}+2}\times\frac{\sqrt[3]{x^2}+1+\sqrt[3]{x}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}}=$$

$$\frac{(3x+\sqrt{x}-4)(\sqrt[3]{x^2}+1+\sqrt[3]{x})}{(x-1)(\sqrt[3]{x^2}+1+\sqrt[3]{x})}\Rightarrow\lim_{x\to 1}\frac{3[(\sqrt{x}-1)(\sqrt{x}+\frac{4}{3})]}{4(\sqrt{x}-1)(\sqrt{x}+4)}=\frac{21}{8}$$

شاآل داود

18,25

۲)

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

$$\begin{array}{l|l} 4x^2-7x+3 & x-1 \\ -4x^2+4x & 4x-3 \\ \hline -3x+3 & \\ 3x-3 & \\ \hline 0 & \end{array} \qquad \begin{array}{l|l} 5x^2-8x+3 & x-1 \\ -5x^2+5x & 5x-3 \\ \hline -3x+3 & \\ 3x-3 & \\ \hline 0 & \end{array}$$

۳)

$$\lim_{x\to 4}\frac{x-4}{\sqrt{x}-2}\Rightarrow\frac{x-4}{\sqrt{x}-2}\times\frac{\sqrt{x}+2}{\sqrt{x}+2}=\frac{\cancel{(x-4)}(\sqrt{x}+2)}{\cancel{x-4}}$$

$$=\sqrt{x}+2=4$$

جابجا

۴)

$$\lim_{x\to 0}\frac{|3x-1|-|3x+1|}{x}$$

$$x\to 0^+:\ \frac{\cancel{1}-3x-3x\cancel{-1}}{x}=\frac{-6x}{x}=-6$$

$$x\to 0^-:\ \frac{1-3x+3x+1}{x}=$$ [illegible]

۴)

$$\lim_{x\to 2}\frac{x-\sqrt{2x}}{2x^2-x-6}=\frac{x+\sqrt{2x}}{x+\sqrt{2x}}=\frac{x^2-2x}{(2x+3)\cancel{(x-2)}(x+\sqrt{2x})}$$

$$x^2-2x=x\cancel{(x-2)}$$

$$\begin{array}{l|l} 2x^2-x-6 & x-2 \\ 2x^2-x-6 & 2x+3 \\ \hline 0 & \end{array}$$

$$=\frac{\overset{2}{x}}{\underbrace{(2x+3)}_{7}\underbrace{(x+\sqrt{2x})}_{4}}=\frac{2}{28}=\frac{1}{14}$$

$$6|\ \lim_{x \to 4} \frac{\sqrt{3x+4} - 4}{\sqrt[3]{5x-7} - 3} \times \frac{\sqrt{3x+4} + 4}{\sqrt[3]{(5x+7)^2} + 9 + 3\sqrt[3]{5x+7}} \times \frac{27}{5} = \frac{81}{40}$$