٢٥

٤- $\lim_{x\to 1} \frac{\sqrt{x^2+3}-2}{x^2-1} = \frac{0}{0} \overset{h\to p}{\Longrightarrow} \frac{2x}{4x} = \frac{1}{2}$ ✓ (٢)

٣- $\lim_{x\to 0} \frac{|2x-1|-|2x+1|}{x} \overset{\frac{0}{0}}{\Longrightarrow} \frac{1-2x-(2x+1)}{x} = \frac{1-2x-2x-1}{x} = \frac{-4x}{x} = -4$ ✓ (٢)

٢- $\lim_{x\to 4} \frac{x-4}{x-2\sqrt{x}} \overset{\frac{0}{0}}{\Longrightarrow} \frac{1}{\frac{1}{2\sqrt{x}}} \overset{h\to p}{\Longrightarrow} = 4$ ✓ (٢)

٦- $\lim_{x\to 2} \frac{x-\sqrt{3x}}{2x^2-x-6} \overset{\frac{0}{0}}{\Longrightarrow} \frac{1-\frac{3}{2\sqrt{3x}}}{4x-1} = \frac{\frac{1}{2}}{7} = \frac{1}{14}$ (٢)

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

$\frac{1}{14}$ ✓

٥- $\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} \overset{\frac{0}{0}}{\Longrightarrow} \overset{h\to p}{=} \frac{\frac{-1}{2\sqrt{x}}}{\frac{+1}{2\sqrt{5-x}}} = \frac{-1}{1} = -2$ (٢)

$\frac{1-\sqrt{x}}{2-\sqrt{5-x}} \cdot \frac{(1+\sqrt{x})}{2} \times \frac{4}{2+\sqrt{5-x}} = \frac{1-x}{4-5+x} \times 2 = \frac{1-x}{x-1} \times 2 = -2$ ✓

٦- $\lim_{x\to 4} \frac{\sqrt{2x+8}-6}{\sqrt[3]{5x+47}-3} \overset{\frac{0}{0}}{=} \overset{h\to 1}{\Longrightarrow} \frac{\frac{2}{2\sqrt{2x+8}}}{\frac{5}{3\sqrt[3]{(5x+47)^2}}} = \frac{\frac{2}{6}}{\frac{5}{27}} = \frac{\frac{1}{3}}{\frac{5}{27}} = \frac{27}{15} = \frac{9}{5}$ (٢)

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-٧

$$\lim_{x \to 1} \frac{\sqrt{2x+\sqrt{2}} - 2}{\sqrt[4]{x} - 1} \overset{\frac{0}{0}}{=} \frac{\frac{2 + \frac{1}{2\sqrt{x}}}{2\sqrt{2x+\sqrt{2}}}}{\frac{1}{4}} = \frac{\frac{2,5}{4}}{\frac{1}{4}} = \left(\frac{2\sqrt{2}+2,5}{4}\right) = \frac{10,5}{4}$$

(٢)

$$(\text{روش}) = \frac{2x+\sqrt{2}-4}{x-1} \times \frac{2}{4} \Rightarrow \text{هوپ} \frac{1}{2\sqrt{2x}} = \frac{(\sqrt{2}x+4)(2\sqrt{2}x+4)}{4-1\sqrt{2}x+1} = \frac{7}{2} \times \frac{2}{4} = \left(\frac{21}{8}\right)$$ ✓

-٨

$$\lim_{x \to 0} \frac{1+\cos^2 x}{\sin^2 x} = \frac{2}{0} \Rightarrow \frac{(1+\cos)(\cos^2+\cos+1)}{\sin^2} \quad \frac{1+\cos^2 x}{1-\cos^2 x} =$$

(٢)

$\cos x = t$

$$\frac{1+t^2}{1-t^2} \Rightarrow \frac{4+2}{-4t} \left(\frac{2}{2}\right) = \frac{(1+\cos)(\cos^2+\cos+1}{\sin^2(1+\cos)(1-\cos)} = \frac{\cos^2-\cos+1}{1-\cos} =$$

$t \to -1$

$\left(\frac{3}{2}\right) = 1,5$ ✓

-٩

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

(٢)

$$\left(\frac{-2}{\sqrt{2}}\right) = (-\sqrt{2})$$

-١٠

$$\lim_{x \to \frac{\pi}{4}} \frac{\tan^2 x - 1}{\cos 2x} \overset{\frac{0}{0}}{=} \Rightarrow \frac{(\tan-1)(\tan+1)}{\cos^2 x - 1} = \left(\frac{\sin-\cos}{\cos}\right)\left(\frac{\sin+\cos}{\cos}\right) =$$

(٢)

$$\frac{1-\cos^2-\cos^2}{\cos^2(2\cos^2-1} = \frac{1-2\cos^2}{2\cos^4-\cos^2} =$$

$$\frac{\frac{\sin^2-\cos^2}{\cos^2}}{\frac{2\cos^2 x - 1}{1}} = \frac{\sin^2-\cos^2}{\cos^2(2\cos^2-1)} =$$

$\cos = t$

$$t \Rightarrow -\frac{\sqrt{2}}{2} \quad \frac{1-2t^2}{2+4-t^2} \quad \frac{-4t}{8t^2-2t} \quad \frac{-4t}{4t-2t} \quad (-2)$$

(الف) ✓

$$\text{ب) } \frac{\sin^2 x - \cos^2 x}{\cos 2x} = \frac{-\cos 2x}{\cos^2 x \times \cos 2x} = \frac{-1}{\cos^2 x} = \frac{-1}{\frac{1}{2}} = (-2)$$

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