بسم الله الذی خلق الحمدی

۱۰ سنایش عراقی زاده

۱ ۱

$$\lim_{x\to 1} \frac{4x^2-7x+3}{5x^2-1x+2} \overset{\text{جایگذاری}}{=} \frac{0}{0} \quad (10)\ \frac{(x-1)(4x-3)}{(x-1)(5x-3)} \xrightarrow{x=1} \frac{1}{2} \quad (1)$$

$$(20)\ \xrightarrow{\text{H.O.P}} \frac{8x-7}{10x-8} = \frac{1}{2} \quad (2)$$

$$\lim_{x\to 0} \frac{|3^x-1|-|2^x+1|}{x} \to \frac{-3^x+1-2^x-1}{x} = \frac{-4x}{x} = -4 \quad (3)$$

$$\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} \overset{\text{جایگذاری}}{=} \frac{0}{0} \Rightarrow \frac{(\sqrt{x}-2)(\sqrt{x}+2)}{(\sqrt{x}-2)} = 4 \quad (4)$$

$$\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-6} \overset{\text{جایگذاری}}{=} \frac{0}{0} \Rightarrow (10)\ \frac{\sqrt{x}(\sqrt{x}-\sqrt{2})}{(\sqrt{x}-\sqrt{2})(\sqrt{x}+\sqrt{2})(2x+3)} = \frac{\sqrt{2}}{4\sqrt{2}\times 7} = \frac{1}{14} \quad (5)$$

$$(20)\ \xrightarrow{\text{H.O.P}} \frac{1-\frac{1}{2}\times 2x^{-\frac{1}{2}}\times 2}{6x-1} = \frac{1-\frac{1}{2}}{7} = \frac{1}{14}$$

$$\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}} = \frac{0}{0} \overset{(10)}{\Rightarrow} \times \frac{1+\sqrt{x}}{1+\sqrt{x}} \times \frac{2+\sqrt{5-x}}{2+\sqrt{5-x}} = \frac{4}{2}\times -1 = -1 \quad (6)$$

$$\frac{1-x}{4-5+x} = -1$$

$$(20)\ \xrightarrow{\text{H.O.P}} \frac{\frac{1}{2}\times x^{-\frac{1}{2}}}{\frac{1}{2}\times 2^{-\frac{1}{2}}\times -1} = -\sqrt{2} \quad (7)$$

$$\lim_{x\to 4} \frac{\sqrt{2x+6}-4}{\sqrt[3]{5x+7}-3} \overset{\text{جایگذاری}}{=} \frac{0}{0} \xrightarrow{\text{H.O.P}} \frac{\frac{1}{2}\times 12^{-\frac{1}{2}}\times 2}{\frac{1}{3}\times 27^{-\frac{2}{3}}\times 5} = \frac{\frac{2}{\sqrt{12}}}{\frac{5}{27}} = \frac{2}{\sqrt{12}}\times\frac{27}{5} = \frac{18\sqrt{3}}{10} \quad (8)$$

١١

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

(٧)

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

(٦)

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

$$1-\cos x$$

(٨)

$$\lim_{x\to \pi/4} \frac{1-\tan x}{\sin x-\cos x} \quad \frac{\cos x-\sin x}{\cos x} = \frac{-1}{\cos x} = -\sqrt{2}$$

$$\sin x-\cos x$$

(٩)

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

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

(١٠)