راه حل میانبر ←

$$\lim_{x\to 1} \frac{3x^2-7x+4}{5x^2-8x+3} = \frac{0}{0} \xrightarrow{\text{رفع ابهام}} \frac{(x-1)(3x-4)}{(x-1)(5x-3)} = \frac{3x-4}{5x-3} \leftarrow 1$$

$$\longrightarrow \frac{3-4}{5-3} = \boxed{\frac{1}{2}}$$

$$\lim_{x\to 0} \frac{|3x-1|-|3x+1|}{x} = \frac{0}{0} \xrightarrow{\text{قدرمطلق}} \frac{1-3x-3x-1}{x} = \frac{-6x}{x} = \boxed{-6} \leftarrow 2$$

$$\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} = \frac{0}{0} \xrightarrow[\text{مزدوج صورت}]{\text{ضرب در}} \frac{(x-4)^2}{x-4} = \boxed{8} \quad 3$$

$$\lim_{x\to 2} \frac{x-\sqrt{3x}}{2x^2-x-6} = \frac{0}{0} \xrightarrow{\text{تجزیه}} \frac{x-\sqrt{3x}}{(x-2)(2x+3)} \times \frac{x+\sqrt{3x}}{x+\sqrt{3x}} = \frac{x^2-3x}{(x-2)(2x+3)(x+\sqrt{3x})} \xrightarrow{x(x-3)} \leftarrow 4$$

$$\frac{x}{4(x+\frac{3}{2})} = \frac{2}{4(\frac{7}{2})} = \boxed{\frac{1}{14}}$$

$$\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{3-x}} = \frac{0}{0} \xrightarrow{\text{تجزیه}} \frac{1-\sqrt{x}}{2-\sqrt{3-x}} \times \frac{2+\sqrt{3-x}}{2+\sqrt{3-x}} \times \frac{1+\sqrt{x}}{1+\sqrt{x}} = \frac{4(1-x)}{4-(3-x)} \leftarrow 5$$

$$\underbrace{x-1}$$

$$= \frac{4(1-x)}{-(1-x)} = \boxed{-4}$$

$$\lim_{x\to 3} \frac{\sqrt{3x+7}-4}{\sqrt[3]{5x+2}-3} = \frac{0}{0} \xrightarrow{\text{تجزیه}} \frac{\sqrt{3x+7}-4}{\sqrt[3]{5x+2}-3} \times \frac{\sqrt{3x+7}+4}{\sqrt{3x+7}+4} \times \frac{\sqrt[3]{(5x+2)^2}+3\sqrt[3]{5x+2}+9}{\sqrt[3]{(5x+2)^2}+3\sqrt[3]{5x+2}+9} \leftarrow 6$$

$$\rightarrow \frac{(3n+2-14)\,3\times3^{2}}{(3n+7-27)\,2\times2} = \frac{3(n-4)\,9\times3\times3}{3(n-4)\,2\times2} = \boxed{\frac{81}{20}}$$

($3n-14$ ↑ ; $3n-20$ ↓)

$$\lim_{n\to1} \frac{\sqrt{3n+\sqrt{n}}-2}{\sqrt[3]{n}-1} = \frac{0}{0} \text{ فرم ابهام} \rightarrow \frac{\sqrt{3n+\sqrt{n}}-2}{\sqrt[3]{n}-1}\times\frac{20}{20}\times\frac{2}{2} \leftarrow 7$$

$$\rightarrow \frac{3(3n+\sqrt{n}-2)}{4(n-1)} \rightarrow \frac{3(\sqrt{n}-1)(3\sqrt{n}+4)}{(\sqrt[3]{n}-1)(\sqrt[3]{n^{2}}+\sqrt[3]{n}+1)4} = \frac{3\times7}{8} = \boxed{\frac{21}{8}}$$

$$\lim_{n\to\pi} \frac{1+\cos^{3}n}{\sin^{2}n} = \frac{0}{0} \text{ فرم ابهام} \rightarrow \frac{(1+\cos n)(\cos^{2}n+1-\cos n)}{(1-\cos n)(1+\cos n)} \leftarrow 8$$

($\sin^{2}n \downarrow 1-\cos^{2}n$)

$$= \frac{1+1+1}{2} = \boxed{\frac{3}{2}}$$

$$\lim_{n\to\pi/4} \frac{1-\tan n}{\sin n-\cos n} = \frac{0}{0} \text{ فرم ابهام} \rightarrow \frac{\cos n-\sin n}{\cos n} \rightarrow \frac{\cos n-\sin n}{\sin n-\cos n} \rightarrow 9 \leftarrow 9$$

($\tan n \rightarrow \frac{\sin n}{\cos n}$)

$$\frac{\cos n-\sin n}{-\cos n(\cos n-\sin n)} = \frac{-1}{\cos n} = \frac{-2}{\sqrt{2}} = \boxed{-\sqrt{2}}$$

($\cos n \downarrow \frac{\sqrt{2}}{2}$)

$$\lim_{n\to\frac{3\pi}{4}} \frac{\tan^{2}n-1}{\cos 2n} = \frac{0}{0} \text{ فرم ابهام} \rightarrow \frac{\frac{\sin^{2}n}{\cos^{2}n}-1}{\cos^{2}n-\sin^{2}n} = \frac{\sin^{2}n-\cos^{2}n}{-\cos^{2}n(\sin^{2}n-\cos^{2}n)} \leftarrow 10$$

($\tan^{2}n \rightarrow \frac{\sin^{2}n}{\cos^{2}n}$; $\cos 2n \downarrow \cos^{2}n-\sin^{2}n$)

$$= -\frac{1}{\cos^{2}n} = \frac{-1}{-\frac{\sqrt{2}}{2}\times-\frac{\sqrt{2}}{2}} = \boxed{-2}$$