-۱

$$f(x)=۲\left[\frac{۲-x}{۲}\right]+a\left[\frac{x+۲}{۳}\right]\xrightarrow{x\to -۲^{+}} ۲[۲^{-}]+a[۰^{+}]=۲$$

$$\xrightarrow{x\to -۲^{-}} ۲[۲^{+}]+a[۰^{-}] \Rightarrow ۶-a$$

$$۲=۶-a \longrightarrow a=۴ \longrightarrow \left[\frac{a}{۳}\right]\longrightarrow\left[\frac{۴}{۳}\right]\longrightarrow[۱,\ldots]=۱$$

-۲

$$\lim_{x\to\frac{\pi}{۶}^{-}}[۲\sin x-۱]\longrightarrow[(۲\times ۱/۲)-۱]\longrightarrow[۰^{-}]=-۱$$

-۳

$$\lim_{x\to -\frac{۱}{۲}}[۸x^{۳}-x]\xrightarrow{-\frac{۱}{۲}^{+}}\lim\left[۱-\frac{۱}{۲}\right]\longrightarrow[۰/۵^{+}]=۰$$

$$\xrightarrow{-\frac{۱}{۲}^{-}}\lim\left[۱-\frac{۱}{۲}\right]\longrightarrow[۰/۸^{-}]=۰ \Rightarrow \boxed{۰}$$

-٤

$$\lim_{x\to(-\frac{۱}{۲})^{-}}\frac{۱۰x-۵+\left[\frac{۳}{x^{۲}}\right]}{۱۶x-\left[-\frac{۲}{x^{۲}}\right]}\longrightarrow\frac{۱۰x-۵+\left[\frac{۳^{-}}{\frac{۱}{۴}}\right]}{۱۶x-\left[-\frac{۲^{+}}{\frac{۱}{۴}}\right]}\Rightarrow\frac{۱۰x+۶}{۱۶x+۸}=\frac{۱}{۰}=-\infty$$

۵

$$\lim_{x\to ۱^{+}}\frac{\sin^{۲}\pi x}{[x]+\cos\pi x}=\frac{۰}{۰}\xrightarrow{\text{رفع ابهام}}\frac{۱-\cos\pi x}{۱+\cos\pi x}\longrightarrow\frac{(۱-\cos\pi x)\cancel{(۱+\cos\pi x)}}{\cancel{(۱+\cos\pi x)}}$$

$$\longrightarrow ۱-(\overset{-۱}{\cos\pi})=۲$$

-۶

$$\lim_{x\to -۱}\frac{\sqrt{۲x+۳}-\sqrt{۳x+۴}}{۱+\sqrt[۳]{x}}=\frac{۰}{۰}\xrightarrow[Hop]{\text{رفع ابهام}}\frac{\frac{۲}{۲\sqrt{۲x+۳}}-\frac{۳}{۲\sqrt{۳x+۴}}}{۰+\frac{۱}{۳\sqrt[۳]{x^{۲}}}}$$

$$\frac{\frac{۲}{۲}-\frac{۳}{۲}}{\frac{۱}{۳}}\Rightarrow\frac{-\frac{۱}{۲}}{\frac{۱}{۳}}\Rightarrow-\frac{۳}{۲}$$

-۷

$$\lim_{x\to 1} \frac{2x - 7\sqrt{x} + 5}{2x - \sqrt{3x+1}} \rightarrow \frac{0}{0} \xrightarrow[\text{Hop}]{\text{رفع ابهام}} \frac{2 - 7\frac{1}{2\sqrt{x}}}{2 - \frac{3}{2\sqrt{3x+1}}}$$

$$\Rightarrow \frac{2 - \frac{7}{2}}{2 - \frac{3}{4}} \Rightarrow \frac{\frac{4-7}{2}}{\frac{8-3}{4}} \Rightarrow \frac{\frac{-3}{2}}{\frac{5}{4}} \rightarrow \frac{4 \times -3}{2 \times 5} = -1.2$$

-۸

$$\lim_{x\to 0} \frac{a + \sqrt{bx + c}}{x} = \frac{1}{4} \xrightarrow[\text{Hop}]{\frac{0}{0}\ \text{رفع ابهام}} \frac{\frac{b}{2\sqrt{bx+c}}}{\frac{1}{1}} = \frac{b}{2\sqrt{bx+c}}$$

$$\downarrow$$

$$\frac{b}{\cancel{2}\sqrt{c}} = \frac{1}{\cancel{4}_{2}}$$

$$2b = \sqrt{c}$$

$$\frac{a+\sqrt{c}}{0} \rightarrow a + \sqrt{c} = 0 \rightarrow a + 2b = 0 \rightarrow a = -2b$$

$$\frac{-2b \times b}{4b^2} \Rightarrow -\frac{1}{2}$$

-۹

$$\lim_{x\to -2\pi} \frac{4 + k\left[\frac{x}{\pi}\right]}{\sin x} = +\infty \xrightarrow{-2\pi^+} \frac{4 + k(-2)}{0^+} = +\infty$$

$$4 - 2k > 0 \rightarrow k < 2 \quad \text{I}$$

$$\xrightarrow{-2\pi^-} \frac{4 - 3k}{0^-} = +\infty \rightarrow 4 - 3k < 0 \rightarrow k > \frac{4}{3} \quad \text{II}$$

$$\xrightarrow[\text{I , II}]{\text{اشتراک}} \frac{4}{3} < k < 2 \xrightarrow{\times(-1)} -2 < -k < -\frac{4}{3} \rightarrow [-k] = -2$$

-۱۰

$$\lim_{x\to 8} \frac{b\sqrt{2+\sqrt[3]{x}} - 2b}{ax - b} \rightarrow \begin{matrix} 2b - 2b = 0 \\ 8a - b = 0 \end{matrix} \rightarrow 8a = b$$

$$\xrightarrow{\text{Hop}} \frac{b\,\frac{\frac{1}{3\sqrt[3]{x^2}}}{2\sqrt{2+\sqrt[3]{x}}}}{a} \rightarrow \frac{b\,\frac{\frac{1}{12}}{2\sqrt{2+2}}}{\frac{a}{1}} \rightarrow \frac{b}{48a} \rightarrow \frac{8a}{48a} = \frac{8}{48} = \frac{1}{6}$$