کیومرث محسنی

۱)

$$2\left[\frac{3-x}{2}\right] + a\left[\frac{x+2}{3}\right] \quad \begin{cases} \to -2^+ & 2+0 \\ \to -2^- & 4+a=2 \Rightarrow a=2 \end{cases}$$

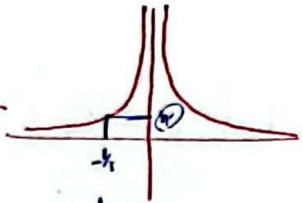
$$\left[\frac{0}{c}\right]=0$$

۲)

$$\lim_{x\to \frac{\pi}{6}^-} [2\sin x - 1] = [0^-] = -1$$

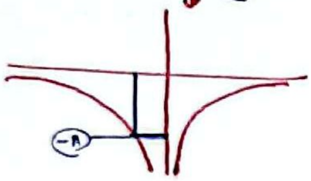
$$\lim_{x\to -\frac{1}{2}} [8x^3 - x] = \left[-1+\frac{1}{2}\right] = -1$$

۳)



۴)

$$\lim_{x\to -\frac{1}{2}^-} \frac{10x - 5 + \left[\frac{3}{x^2}\right]}{16x - \left[-\frac{4}{x^2}\right]} = \frac{1}{0^-} = -\infty$$



۵)

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

۶)

$$\lim_{x\to -1} \frac{\sqrt{2x+3}-\sqrt{3x+4}}{1+\sqrt[3]{x}} \xrightarrow{hop} \frac{\frac{2}{2\sqrt{2x+3}} - \frac{3}{2\sqrt{3x+4}}}{\frac{1}{3\sqrt[3]{x^2}}}$$

۷)

$$\lim_{x\to 1} \frac{2x-7\sqrt{x}+5}{3x-\sqrt{3x+1}} = \frac{2-\frac{7}{2\sqrt{x}}}{3-\frac{3}{2\sqrt{3x+1}}} = \frac{-\frac{3}{2}}{\frac{5}{4}} = -\frac{6}{5}$$

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$$\lim_{x \to 0} \frac{a + \sqrt{bx+c}}{x} = \frac{1}{4} \longrightarrow a = -\sqrt{c} \qquad \frac{-\sqrt{c} \cdot \frac{\sqrt{c}}{2}}{c} = -\frac{1}{2}$$ (۸)

$$\longrightarrow \text{H.P} \quad \frac{b}{2\sqrt{bx+c}} = \frac{1}{4} \qquad \frac{b}{2\sqrt{c}} = \frac{1}{4} \Rightarrow 2b = \sqrt{c}$$

$$\frac{9 + k\left[\frac{x}{\pi}\right]}{\sin x} = +\infty$$ (۹)

$-2\pi^+$: $\sin > 0$, $\frac{9-3k > 0}{0^+}$ — $k < 3$

$\frac{9}{2} < k < 3$

$-2\pi^-$: $\sin < 0$, $\frac{9-2k < 0}{0^-} \to \frac{9}{2} < k$

$$\longrightarrow [-k] = -3$$

$$\lim_{x \to 8} \frac{b\sqrt{2+\sqrt[3]{x}} - 2b}{ax-b} \qquad \frac{b\left(\frac{1}{3\sqrt[3]{x^2}}\right)}{2\sqrt{2+\sqrt[3]{x}}} \quad (12) \quad (4) \quad = \frac{b}{48}$$ (۱۰)

$$\Rightarrow 8a - b = 0 \qquad 8a = b$$

$$\frac{b}{48a} = \frac{1}{6}$$