امین جلالی

(۱)

$-1^+ \to 2\left[\frac{1-(-1^+)}{2}\right] + a\left[\frac{-1^+ + 1}{3}\right] = 2(1) - 3$

$-1^- \to 2\left[\frac{1-(-1^-)}{2}\right] + a\left[\frac{-1^- + 1}{3}\right] = 2(2) - a$

$\Rightarrow 4 - a = 3 \Rightarrow a = 1$

$\Rightarrow \left[\frac{1}{3}\right] = \boxed{0}$

(۲)

$\lim \left[2\left(\frac{1}{2}\right)^- - 1\right] \to [0^-] = \boxed{-1}$

(۳)

$-\frac{1}{2}^+ \to \left[8\left(-\frac{1}{8}\right)^+ - \left(-\frac{1}{2}^+\right)\right] = [0^-] = -1$

$\to \left[8\left(-\frac{1}{8}^-\right) - \left(-\frac{1}{2}^-\right)\right] = [0^+] = 0$

$\Rightarrow$ حد ندارد

(۴)

$\Rightarrow \left[\frac{3}{x^2}\right] = [12^-] = 11$

$\to \left[-\frac{2}{x^2}\right] = [(-8)^+] = -8$

$\Rightarrow \lim_{x\to -\frac{1}{2}^-} \frac{10x - 5 + 11}{+16x + 8} = \frac{1}{0^-} = \boxed{-\infty}$

(۵)

$\lim_{x\to 1^+} \frac{\sin^2 \pi^+}{1+\cos \pi^+ x} \xrightarrow[\text{چون مبهم است}]{\text{رفع ابهام } \frac{0}{0}} \frac{1-\cos^2 \pi^+}{1+\cos \pi x} \Rightarrow 1 - \cos \pi^+ \to 1-(-1) = \boxed{2}$

(۶)

$\xrightarrow[\text{مبهم است.}]{\text{رفع ابهام } \frac{0}{0} \text{ چون}} hop \to \frac{\frac{2}{2\sqrt{2x+3}} - \frac{3}{2\sqrt{3x+4}}}{\frac{1}{3\sqrt[3]{x^2}}} \xrightarrow{x\to -1} \frac{\frac{2}{2} - \frac{3}{2}}{\frac{1}{+3}} = \frac{-\frac{1}{2}}{\frac{1}{3}} = -\frac{3}{2} = \boxed{-1{,}5}$

(۷)

$\xrightarrow[\text{مبهم است}]{\text{رفع ابهام } \frac{0}{0} \text{ چون}} hop \to \frac{2 - \frac{7}{2\sqrt{x}}}{2 - \frac{3}{2\sqrt{3x+1}}} \xrightarrow{x\to 1} \frac{2 - \frac{7}{2}}{2 - \frac{3}{4}} = \frac{-\frac{3}{2}}{\frac{5}{4}} = -\frac{6}{5} = \boxed{-1{,}2}$

(۸)

$\xrightarrow[\text{مبهم است}]{\text{رفع ابهام } \frac{۰}{۰} \text{ چون}}$ hop $\longrightarrow \dfrac{\frac{b}{۲\sqrt{bx+c}}}{۱} \xrightarrow{x\to ۰} \dfrac{b}{۲\sqrt{c}} = \dfrac{۱}{۴} \Rightarrow \boxed{b=۱ \ , \ c=۴}$

$\Rightarrow a+\sqrt{bx+c}=۰ \xrightarrow{x\to ۰} a+\sqrt{۴}=۰ \Rightarrow \boxed{a=-۲} \Longrightarrow \dfrac{-۲\,(۱)}{۴} = \boxed{-\dfrac{۱}{۲}}$

(۹)

$\xrightarrow{-۲\pi^+} \dfrac{۴+k\left[\frac{-۲\pi^+}{\pi}\right]}{۰^+} = \dfrac{۴-۲k}{۰^+} \Rightarrow ۴-۲k>۰ \Rightarrow k<۲$

$\xrightarrow{-۳\pi^-} \dfrac{۴+k\left[\frac{-۳\pi^-}{\pi}\right]}{۰^-} = \dfrac{۴-۳k}{۰^-} \Rightarrow ۴-۳k<۰ \Rightarrow k>\dfrac{۴}{۳}$

$\Rightarrow \dfrac{۴}{۳}<k<۲ \longrightarrow -\dfrac{۴}{۳}>-k>-۲ \Longrightarrow \boxed{[-k]=-۲}$

(۱۰)

$\lim\limits_{x\to ۰} \dfrac{b\sqrt{۴+\sqrt[۳]{x}}-۲b}{ax-b} = \dfrac{۰}{۰} \xrightarrow{\text{رفع ابهام } \frac{۰}{۰}}$ hop $\to \dfrac{\dfrac{\frac{b}{۳\sqrt[۳]{x^۲}}}{۲\sqrt{۴+\sqrt[۳]{x}}}}{a} = \dfrac{\frac{\frac{b}{۱۲}}{۴}}{a} = \dfrac{b}{۴۸a}$

$\Rightarrow ۸a=b \longrightarrow ۴۸a=۶b$

$\dfrac{b}{۶b} = \boxed{\dfrac{۱}{۶}}$