نام و نام خانوادگی ...مهسا ... عابد........ پاسخنامه تشریحی تکلیف شماره ...۱۲... کلاس ...یازدهم دختر ۸.........

۱

$f(x) = 2\left[\frac{2-x}{2}\right] + a\left[\frac{x+2}{3}\right]$

$\left[1-\frac{x}{2}\right] \quad \left[\frac{x}{3}+\frac{2}{3}\right]$

$x=-2$ حد دارد $\Rightarrow \lim\limits_{x\to -2^+} f(x) = \lim\limits_{x\to -2^-} f(x) \Rightarrow$

$\lim\limits_{x\to -2^-} f(x) = \lim\limits_{x\to -2^-} 2\underbrace{\left[1-\frac{-2^-}{2}\right]}_{2^+} + a\overbrace{\left[\frac{-2^-}{3}+\frac{2}{3}\right]}^{-1} = 4-a$

$\lim\limits_{x\to -2^+} f(x) = \lim 2\overbrace{\left[1+1^-\right]}^{1} + a\overbrace{\left[-\frac{2^+}{3}+\frac{2}{3}\right]}^{0} = 2$

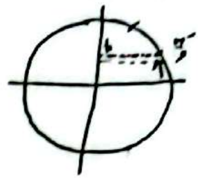
$\Rightarrow 4-a=2$

$\Rightarrow \boxed{2=a}$

$\left[\frac{2}{3}\right] = \boxed{0}$

۲

$\lim\limits_{x\to (\frac{\pi}{6})^-} [2\underbrace{\sin x}_{\frac{1}{2}^-}-1] = \lim\limits_{x\to \frac{\pi}{6}^-} [1^- - 1] = \lim\limits_{x\to \frac{\pi}{6}^-} [0^-] = \boxed{-1}$



$x < \frac{\pi}{6} \Rightarrow \sin x < \frac{1}{2} \Rightarrow 2\sin x < 1 \Rightarrow 2\sin x - 1 < 0$

۳

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

۴

$\lim\limits_{x\to -\frac{1}{2}^-} \frac{10x-5+\left[\frac{3}{x^2}\right] \; (1)}{16x-\left[-\frac{2}{x^2}\right] \; (2)} = \lim\limits_{x\to -\frac{1}{2}^-} \frac{10x-5+11}{16x+8} = \lim\limits_{x\to -\frac{1}{2}^-} \frac{\overbrace{-5-5+11}^{1}}{\underbrace{-8^-+8}_{0^-}} = -\infty$

$x < -\frac{1}{2} \Rightarrow |x| > \frac{1}{2} \Rightarrow x^2 > \frac{1}{4} \Rightarrow \frac{3}{x^2} < 12 \rightarrow (1)$

$x < -\frac{1}{2} \Rightarrow |x| > \frac{1}{2} \Rightarrow x^2 > \frac{1}{4} \Rightarrow \frac{2}{x^2} < 8 \Rightarrow -\frac{2}{x^2} > -8$

۵

$\lim\limits_{x\to 1^+} \frac{\sin^2 \pi x}{[x]+\cos \pi x} = \lim\limits_{x\to 1^+} \frac{\sin^2 \pi x}{1+\cos \pi x} \; ; \; \sin^2 \overset{\text{اتحاد}}{\Rightarrow} \lim\limits_{x\to 1^+} \frac{1-\cos^2 \pi x}{1+\cos \pi x} = \lim\limits_{x\to 1^+} \frac{(1-\cos \pi x)(1+\cos \pi x)}{1+\cos \pi x}$

$\Rightarrow \lim\limits_{x\to 1^+} 1-\cos \pi x = \boxed{2}$

$$\lim_{x\to -۱} \frac{\sqrt{۲x+۳}-\sqrt{۳x+۴}}{۱+\sqrt[۳]{x}} : \frac{۰}{۰} \text{ ابهام} \Rightarrow \lim_{x\to -۱} \frac{\sqrt{۲x+۳}-\sqrt{۳x+۴}}{۱+\sqrt[۳]{x}} \times \frac{\sqrt{۲x+۳}+\sqrt{۳x+۴}}{\sqrt{۲x+۳}+\sqrt{۳x+۴}} \times \frac{۱+(\sqrt[۳]{x})^۲-\sqrt[۳]{x}}{۱+(\sqrt[۳]{x})^۲-\sqrt[۳]{x}}$$ ۶

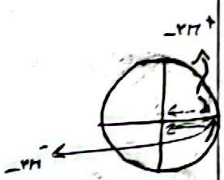
$$= \lim_{x\to -۱} \frac{-\cancel{(۱+x)}(۱+(\sqrt[۳]{x})^۲-\sqrt[۳]{x})}{\cancel{(۱+x)}(\sqrt{۲x+۳}+\sqrt{۳x+۴})} = \boxed{\frac{-۳}{۲}}$$

$$\lim_{x\to ۱} \frac{۲x-۷\sqrt{x}+۵}{۲x-\sqrt{۳x+۱}} \xrightarrow{HoP} \lim_{x\to ۱} \frac{۲-\frac{۷}{۲\sqrt{x}}}{۲-\frac{۳}{۲\sqrt{۳x+۱}}} = \lim_{x\to ۱} \frac{۲-\frac{۷}{۲}}{۲-\frac{۳}{۴}} = \frac{-\frac{۳}{۲}}{\frac{۵}{۴}} = \frac{-۱۲}{۱۰} = \boxed{-\frac{۶}{۵}}$$ ۷

$$\lim_{x\to ۰} \frac{a+\sqrt{bx+c}}{x} = \frac{۱}{۴} \xrightarrow{HoP} \lim_{x\to ۰} \frac{\frac{b}{۲\sqrt{bx+c}}}{۱} = \frac{۱}{۴} \Rightarrow \lim_{x\to ۰} \frac{b}{۲\sqrt{c}} = \frac{۱}{۴} \Rightarrow \frac{b}{\sqrt{c}} = \frac{۱}{۲} \Rightarrow ۲b = \sqrt{c} \Rightarrow b = \frac{\sqrt{c}}{۲}$$ ۸

$$a+\sqrt{bx+c} \xrightarrow{x=۰} a+\sqrt{c} = ۰ \Rightarrow a = -\sqrt{c} \quad / \quad \frac{ab}{c} = \frac{(-\cancel{\sqrt{c}})(\cancel{\sqrt{c}})}{۲\cancel{c}} = -\frac{۱}{۲}$$

$$\lim_{x\to -۲\pi} \frac{۴+k[\frac{x}{\pi}]}{\sin x} \begin{cases} \lim_{x\to -۲\pi^+} \frac{۴+k\overset{\text{تابع صعودی}}{[\frac{x}{\pi}]}}{\sin x} = \lim_{x\to -۲\pi^+} \frac{۴-۲k}{\underset{۰^+}{\sin x}} = +\infty \Rightarrow ۴-۲k>۰ \Rightarrow k<۲ \\ \lim_{x\to -۲\pi^-} \frac{۴+k[\frac{x}{\pi}]}{\sin x} = \lim_{x\to -۲\pi^-} \frac{۴-۳k}{\underset{۰^-}{\sin x}} = +\infty \Rightarrow ۴-۳k<۰ \Rightarrow k>\frac{۴}{۳} \end{cases} \xrightarrow{\cap} \frac{۴}{۳}<k<۲$$ ۹



$$\Rightarrow -۲<-k<-\frac{۴}{۳} \Rightarrow \boxed{[-k]=-۲}$$

$$\lim_{x\to ۸} \frac{b\sqrt{۲+\sqrt[۳]{x}}-۲b}{ax-b} \xrightarrow[\substack{\Rightarrow ax-b=۰ \\ \xrightarrow{x=۸} ۸a=b}]{\text{پاسخ حد، حقیقی و غیرصفر}} \lim_{x\to ۸} \frac{۸a(\sqrt{۲+\sqrt[۳]{x}}-۲)}{a(x-۸)} \xrightarrow{a\neq ۰} \lim_{x\to ۸} \frac{۸(\sqrt{۲+\sqrt[۳]{x}}-۲)}{x-۸}$$ ۱۰

$$\xrightarrow{HoP} \lim_{x\to ۸} ۸\frac{\frac{۱}{۳\sqrt[۳]{x^۲}}}{۲\sqrt{۲+\sqrt[۳]{x}}} = ۸\times\frac{۱}{۴۸} = \boxed{\frac{۱}{۶}}$$