Subject :
Year: Month: Day:

سارا عبدالهی

۱- تابع $f(x)=2\left[\frac{2-x}{2}\right]+a\left[\frac{x+2}{3}\right]$ در نقطه‌ی $x=0$ حد دارد. مقدار $\left[\frac{a}{3}\right]$ ؟

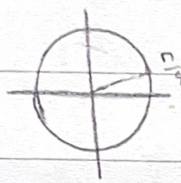
$\xrightarrow{(-2)^+} 2[2^-]+a\left[\frac{0^+}{3}\right]=2(1)+a(0)=2$

$\xrightarrow{(-2)^-} 2[2^+]+a[0^-]=2(2)-a=2 \rightarrow 4-a=2 \quad a=2$

$\left[\frac{a}{3}\right] \xrightarrow{2^+} 0$

$\xrightarrow{2^-} 0$

۲- مقدار $\lim_{x\to(\frac{\pi}{6})^-}[2\sin x-1]$ ؟



$x<\frac{\pi}{6} \rightarrow \sin x>\frac{1}{2}$

$2\sin x>1 \rightarrow 2\sin x-1>0$

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

۳- حاصل $\lim_{x\to-\frac{1}{2}}[8x^3-x]$ ؟

$8\left(-\frac{1}{8}\right)+\frac{1}{2}=-\frac{1}{2}$

$\left[-\frac{1}{2}\right]=-1$

۴- مقدار $\lim_{x\to(-\frac{1}{2})^-}\frac{10x-5+\left[\frac{3}{x^2}\right]}{14x-\left[\frac{-2}{x^2}\right]}$ ؟

$x<-\frac{1}{2}$

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

$\left[\frac{3}{x^2}\right]\to 11^-$

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

$\frac{1}{x}>-2 \rightarrow \frac{1}{x^2}<4$

$\frac{10x-5+11}{14x-8}=\frac{10x+6}{14x+8}=\frac{1}{-4+8}=\frac{1}{0^-}=-\infty$

$\rightarrow \frac{-1}{x^2}>-4 \rightarrow \frac{-2}{x^2}>-8$

صدبار

Subject :
Year: Month: Day:

۵- $\lim_{x\to 1^+} \frac{\sin^2 \pi x}{[x] + \cos \pi x}$!

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

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

۶- حاصل $\lim_{x\to -1} \frac{\sqrt{2x+3} - \sqrt{3x+4}}{1+\sqrt[3]{x}}$ ؟

$\lim_{x\to -1} \frac{\sqrt{2x+3} - \sqrt{3x+4}}{1+\sqrt[3]{x}} \times \frac{2}{2} \times \frac{3}{3} = \frac{2x+3-3x-4}{1+x} \times \frac{3}{2} = \frac{-1}{1} \times \frac{3}{2} = \frac{-3}{2}$

$-(x+1)$

$(x+1)(x^2+x+1)$

$1-1+1$

۷- حاصل $\lim_{x\to 1} \frac{2x - 2\sqrt{\sqrt{x}} + 3}{2x - \sqrt{3x+1}}$ ؟

$\xrightarrow{H\circ P} \frac{2 - \frac{2}{2\sqrt{x}}}{2 - \frac{3}{2\sqrt{3x+1}}} = \frac{2 - \frac{2}{2}}{2 - \frac{3}{4}} = \frac{-\frac{3}{4}}{\frac{5}{4}} = \frac{-3}{5}$

$\frac{4}{2}$

$\frac{8}{4} - \frac{3}{4}$

۸- $\lim_{x\to 0} \frac{a + \sqrt{bx+c}}{x} = \frac{1}{4}$ اگر $\frac{ab}{c}$ چقدر باشد ؟ ✓

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

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

$\frac{\frac{b}{2\sqrt{bx+c}}}{1} = \frac{1}{4} \rightarrow \frac{b}{2\sqrt{c}} = \frac{1}{4} \rightarrow 2b = \sqrt{c} \rightarrow 4b^2 = c$

NOTEBOOK POOYA

Subject :
Year: Month: Day:

۹- اگر $\lim_{x \to -2n} \frac{4+k\left[\frac{x}{n}\right]}{\sin x} = +\infty$ باشد مقدار $[-k]$؟

$-2n^+ \longrightarrow \frac{4-2k}{0^+} = +\infty \quad 4-2k>0 \quad k<2$

$-2n^- \longrightarrow \frac{4-2k}{0^-} = +\infty \quad 4-2k<0 \quad k>\frac{4}{3}$

$\frac{4}{3} < k < 2$

$-2 < -k < -\frac{4}{3}$

$[-k] = -2$

۱۰- مقدار غیرصفر حد $\lim_{x \to 8} \frac{b\sqrt{2+\sqrt[3]{x}}-2b}{ax-b}$ را بیابید. (حقیقی و غیرصفر)

$$\lim_{x \to 8} \frac{b \times \frac{1}{3\sqrt[3]{x^2}}}{2\sqrt{2+\sqrt[3]{x}}} = \frac{\frac{1}{12}}{\frac{4}{1}} = \frac{\frac{1}{48}}{\frac{1}{8}} = \frac{8}{48} = \frac{1}{6}$$

$$\frac{b}{8} \quad a$$

$8a-b=0$

$a=\frac{b}{8}$