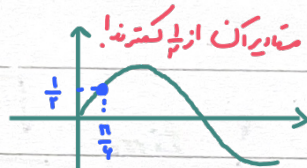


۱- تابع $f(x) = 2 \left[\frac{x-2}{2} \right] + a \left[\frac{x+2}{2} \right]$ در نقطه $x = -2$ حد دارد. مقدار $\left[\frac{a}{2} \right]$ ؟

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

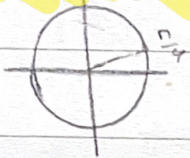
$$(-2)^- \rightarrow 2 \left[\frac{-2+2}{2} \right] + a \left[\frac{0^-}{2} \right] = 2(0) - a = -a \rightarrow 2 - a = 2 \quad a = 0$$

$$\left[\frac{a}{2} \right] = 0 \quad \checkmark$$



$$[2 \sin \frac{\pi}{4} - 1] = [2(\frac{1}{2}) - 1] = [0] = 0$$

مقدار $\sin 0$ از ۰ کمتر است!



$$x < \frac{\pi}{4} \rightarrow \sin x > \frac{1}{2}$$

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

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

۲- مقدار $\lim_{x \rightarrow (\frac{\pi}{4})^-} [2 \sin x - 1]$ ؟

$$\lim_{x \rightarrow (\frac{\pi}{4})^-} [2 \sin x - 1] = [0] = 0$$

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

۳- حاصل $\lim_{n \rightarrow -\frac{1}{2}} [12n^3 - n]$ ؟

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

$$x < -\frac{1}{2} \rightarrow \frac{1}{x} < -2 \rightarrow \frac{1}{x^2} < 4 \rightarrow \frac{1}{x^2} < 11$$

۴- مقدار $\lim_{x \rightarrow (-\frac{1}{2})^+} \frac{10x - 5 + \left[\frac{11}{x^2} \right]}{14x - \left[\frac{-2}{x^2} \right]}$ ؟

$$\frac{10x - 5 + 11}{14x - 2} = \frac{10x + 6}{14x + 8} = \frac{1}{-1 + 2} = \frac{1}{1} = 1$$

! $\lim_{n \rightarrow 1^+} \frac{\sin^n n}{[n] + \cos n}$ - 0

$\lim_{n \rightarrow 1^+} \frac{\sin^n n}{1 + \cos n} = \frac{1 - \cos n}{1 + \cos n}$

$\frac{(1 - \cos n)(1 + \cos n)}{1 + \cos n} = \lim_{n \rightarrow 1^+} 1 - \cos n = 1 - (-1) = 2$

! $\lim_{n \rightarrow -1} \frac{\sqrt{n+1} - \sqrt{n+1}}{1 + \sqrt{n}}$ $\lim_{n \rightarrow -1}$

$\lim_{n \rightarrow -1} \frac{\sqrt{n+1} - \sqrt{n+1}}{1 + \sqrt{n}} \times \frac{1}{1} \times \frac{0}{0} = \frac{-(n+1)}{1 + n} \times \frac{1}{1} = \frac{-1}{1} \times \frac{1}{1} = -1$

! $\lim_{n \rightarrow 1} \frac{n - \sqrt{n} + 1}{n - \sqrt{n+1}}$ $\lim_{n \rightarrow 1}$

Hor $\frac{n - \sqrt{n}}{n - \sqrt{n+1}} = \frac{n - \frac{1}{n}}{n - \frac{1}{n}} = \frac{-\frac{1}{n}}{\frac{1}{n}} = -1$

! $\frac{ab}{c}$ $\lim_{n \rightarrow 0} \frac{a + \sqrt{bn+c}}{n} = \frac{1}{n}$

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

$\rightarrow \frac{-\sqrt{b} \times \sqrt{b}}{1 \times \sqrt{b}} = \frac{-1}{1}$

$\frac{b}{1 \times \sqrt{bn+c}} = \frac{1}{n} \rightarrow \frac{b}{\sqrt{c}} = \frac{1}{n} \rightarrow \sqrt{b} = \sqrt{c} \rightarrow \sqrt{b} = \sqrt{c}$

Subject : _____

Year: _____ Month: _____ Day: _____

✓ اگر $\lim_{n \rightarrow \infty} \frac{f+k \left[\frac{n}{\pi} \right]}{f-k} = +\infty$ باشد مقدار $[-k]$ ؟

$$-2n^+ \rightarrow \frac{f-2k}{0^+} = +\infty$$

$$n \rightarrow -2n \quad \sin n \quad \frac{f-2k}{0} \quad \frac{f-2k}{0} > 0 \quad k < 2$$

$$-2n^- \rightarrow \frac{f-2k}{0^-} = +\infty$$

$$f-2k < 0 \quad k > \frac{f}{2}$$

$$\frac{f}{3} < k < 2 \quad -2 < -k < -\frac{f}{3}$$

$$[-k] = -2 \quad \checkmark$$

۱۰. مقدار غیر صفر حد $\lim_{n \rightarrow \infty} \frac{b\sqrt{2+\sqrt[3]{n}}-2b}{an-b}$ را بیابید. (حقیقی و غیر صفر)

$$\lim_{n \rightarrow \infty} \frac{\frac{1}{\sqrt[3]{2+\sqrt[3]{n}}}}{\frac{1}{an-b}} = \frac{\frac{1}{12}}{\frac{f}{1}} = \frac{1}{fn} = \frac{n}{fn} = \frac{1}{f} = \frac{1}{9}$$

$$an-b=0$$

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