

الف) $\lim_{n \rightarrow \mu^+} \frac{\mu n + \omega}{n+1} = \frac{\mu \mu + \omega}{\mu+1} = \mu$ 19, 5 مقرين به سبب

ب) $\lim_{n \rightarrow \mu^-} \frac{\mu n + \omega}{n+1} = \mu$ ✓ 2 2 $e) \lim_{n \rightarrow \mu} \frac{\mu n + \omega}{n+1} = \frac{\mu \mu + \omega}{\mu+1} = \mu$

د) $\lim_{n \rightarrow 0} \frac{\mu n + \nu}{\lfloor \mu^n \rfloor} =$ تعريف لستو
 $0^+ \rightarrow [0^+] = 0$

الف) $\lim_{n \rightarrow \mu^-} \lfloor \mu n \rfloor = \mu$ ✓ 2 $\mu \times \mu = 9$
 $\mu \times \mu \rightarrow \lfloor \mu \rfloor = \mu$

ب) $\lim_{n \rightarrow \mu^-} \lfloor \mu n - \mu \rfloor = 9$
 $\mu \times \mu \rightarrow \mu n - \mu < 10$

ج) $\left[\lim_{n \rightarrow \mu^-} \mu n - \mu \right] = 10$
 $\hookrightarrow \lim_{n \rightarrow \mu^-} \mu n - \mu = 10$

د) $\left[\lim_{n \rightarrow \mu^+} \mu n - \mu \right] = 10$
 $\hookrightarrow \lim_{n \rightarrow \mu^+} \mu n - \mu = 10$

الف) $\lim_{n \rightarrow \mu^-} \frac{\mu n + 1}{\mu} = \frac{\mu}{\mu} = \mu \omega$
 $\mu \times \mu \rightarrow \lfloor \mu \rfloor = \mu$

ب) $\lim_{n \rightarrow \mu} \left[\frac{\mu n + 1}{\mu} \right] = \mu$ 2

ج) $\left[\lim_{n \rightarrow \mu} \frac{\mu n + 1}{\mu} \right] = \omega$ ✓ 2 $\mu \times \mu \rightarrow \mu n + 1 < 10 \rightarrow \frac{\mu n + 1}{\mu} < \omega$
 $\hookrightarrow \lim_{n \rightarrow \mu^-} \frac{\mu n + 1}{\mu} = \omega$
 $\hookrightarrow \lim_{n \rightarrow \mu^+} \frac{\mu n + 1}{\mu} = \omega$

$$\text{الف) } \lim_{x \rightarrow 1} \frac{x - \omega}{(x-1)(x-\omega)} = \lim_{x \rightarrow 1} \frac{1}{x-1} \rightarrow \lim_{x \rightarrow 1^+} \frac{1}{x-1} = \lim_{0^+} \frac{1}{0^+} = +\infty$$

$$\lim_{x \rightarrow 1^-} \frac{1}{x-1} = \lim_{0^-} \frac{1}{0^-} = -\infty$$

$$\text{ب) } \lim_{x \rightarrow \omega} \frac{x - \omega}{(x - \omega)^2} = \frac{1}{0^+} = +\infty$$

$$\text{الف) } \left. \begin{array}{l} x < -\omega \rightarrow -\omega x > 9 \quad [-\omega x] = 9 \\ \omega x < -1\omega \quad [\omega x] = -14 \end{array} \right\} \rightarrow \lim_{x \rightarrow -\omega^-} f(x) = \omega$$

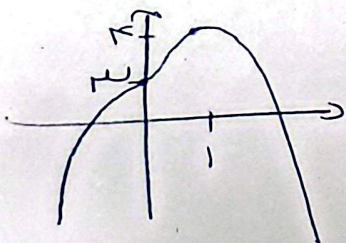
$$\left. \begin{array}{l} x > -\omega \rightarrow -\omega x < 9 \quad [-\omega x] = 1 \\ \omega x > -1\omega \quad [\omega x] = -1\omega \end{array} \right\} \rightarrow \lim_{x \rightarrow -\omega^+} f(x) = 1 + 1\omega = 1\omega$$

$$\text{ب) } \lim_{x \rightarrow (-\frac{1}{\omega})^-} \left[\frac{1}{x^2} \right] = -14$$

$$x < -\frac{1}{\omega} \rightarrow x^2 > \frac{1}{\omega^2} \rightarrow x^2 > \frac{1}{14} \quad \frac{1}{x^2} < 14$$

$$\rightarrow -\frac{1}{x^2} > -14$$

$$\text{الف) } f'(x) = 12x^2 - 12x^3 = 12x^2(1-x)$$



$$f(1) = 4$$

$$f(0) = 0$$

$$\lim_{x \rightarrow 1} [f(x)] = 4$$

ب) [redacted]

از سید نورالدین استادی سینه‌ها را بساز

$$\lim_{x \rightarrow 0^+} [f(x)] = 0$$

$$\lim_{x \rightarrow 0^-} [f(x)] = 0$$

$$\text{الف) } \lim_{n \rightarrow p^+} \frac{|n^p - 1|}{n^p - 1} = \frac{n^p - 1}{n^p - 1} = \frac{(n-1)(n^{p-1} + n^{p-2} + \dots + 1)}{(n-1)(n+1)} = \frac{n^{p-1} + n^{p-2} + \dots + 1}{n+1} = \frac{1}{1} = 1$$

$$n \rightarrow p^- \rightarrow -\frac{(n^p - 1)}{n^p - 1} = -1$$

ب) $\lim_{n \rightarrow \pi} \frac{|\sin n|}{\sin n}$

$$n \rightarrow \pi^+ \quad \frac{-\sin n}{\sin n} = -1$$

$$n \rightarrow \pi^- \quad \frac{\sin n}{\sin n} = 1$$

الف) $\lim_{n \rightarrow \frac{p\pi}{2}} \sqrt{\cos n}$

$$n \rightarrow \frac{p\pi}{2}^+ \rightarrow \cos n < 0 \quad \lim \sqrt{0} = 0$$

$$n \rightarrow \frac{p\pi}{2}^- \rightarrow \cos n > 0 \rightarrow \text{تعریف نشده}$$

ب) $\lim_{n \rightarrow 0} \sqrt{n - p\sqrt{n}}$

$$n \rightarrow 0^+ \rightarrow 0$$

$$n \rightarrow 0^- \rightarrow \text{تعریف نشده}$$

الف) $\lim_{n \rightarrow 0^+} \frac{(-1)^{[n]}}{n - n^p}$

$$n \rightarrow 0^+ \rightarrow [n] = 0$$

$$= \frac{1}{n - n^p} = \frac{1}{n^{p-1}(1 - n^{p-1})} = -\infty$$

برای n^+ عبارت منفی است

$$n \rightarrow 0^- \rightarrow [n] = -1 \rightarrow \frac{-1}{n - n^p} = \frac{-1}{n^{p-1}(1 - n^{p-1})} = +\infty$$

برای n^- عبارت منفی است

ب) $\lim_{n \rightarrow p^+} \frac{n^p - [n^p]}{n - [n]}$

$$n \rightarrow p^+ \rightarrow n > p \rightarrow n^p > p^p \rightarrow [n^p] = p^p$$

$$[n] = p$$

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

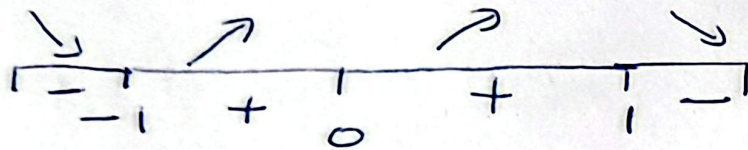
$\lim_{n \rightarrow p^-} \frac{n^p - [n^p]}{n - [n]}$

$$n \rightarrow p^- \rightarrow n < p \rightarrow n^p < p^p \rightarrow [n^p] = p^p$$

$$[n] = p$$

$$\lim_{n \rightarrow p^-} \frac{n^p - p^p}{n - p} = \frac{1}{1} = 1$$

$$\omega) f'(x) = 10x^9 - 10x^7 =$$



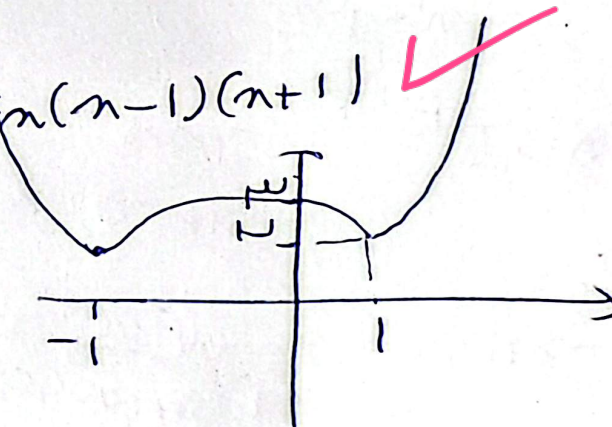
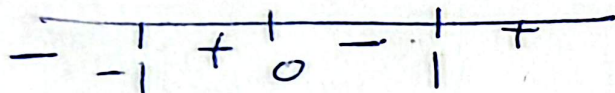
$$10x^7(1-x^2)$$



$$f(0)=0 \quad f(1)=10-10=0 \\ f(-1)=0$$

2

$$b) f'(x) = 15x^4 - 15x = 15x(x-1)(x+1)$$



$$f(0)=0 \quad f(1)=0$$

$$f(-1)=1-1+15=15$$

$$n - 2\sqrt{n} \geq 0 \rightarrow \sqrt{n}(\sqrt{n}-2) \geq 0$$

$$n \geq 0 \quad I$$

$$\sqrt{n} \leq 2 \\ n \geq 4$$

II

سوال ۸-ب

I و II $n \geq 0 \leq n \geq 4 \rightarrow$ برای اطمینان شرط تعریف
نمیباشد

$$\lim_{n \rightarrow \infty} \sqrt{n-2\sqrt{n}} = *$$