

نام و نام خانوادگی تاریخ
 پاسخنامه تشریحی تکلیف شماره ۱.۱.۸. کلاس
 ...
 ...

(الف)

$$\lim_{n \rightarrow 2^+} \frac{2n+5}{n+1} \Rightarrow \frac{9}{3} = 3$$

(ب)

$$\lim_{n \rightarrow 2^-} \frac{2n+5}{n+1} \Rightarrow \frac{9}{3} = 3$$

(ج)

$$\lim_{n \rightarrow 2} \frac{2n+5}{n+1} \Rightarrow \frac{9}{3} = 3$$

(د)

$$\lim_{n \rightarrow 0} \frac{2n+5}{n+1} \Rightarrow \frac{5}{1} = 5$$



$$\frac{5}{0} = \text{تعریف نشده}$$

(الف)

$$\lim_{n \rightarrow \infty} \{n\} - 2 \Rightarrow 1 - 2 = -1$$

(ب)

$$\lim_{n \rightarrow \infty} \{n-2\} \Rightarrow [10^-] \Rightarrow 9$$

(ج)

$$\lim_{n \rightarrow \infty} \{n-2\} = 10$$

(د)

$$\lim_{n \rightarrow \infty} \{n-2\} = 10$$

(الف)

$$\lim_{n \rightarrow 2^-} \frac{2n+5}{n+1} \Rightarrow \frac{9}{3} = 3$$

(ب)

$$\lim_{n \rightarrow 2^-} \{n\} \Rightarrow [2^-] \Rightarrow 1$$

(ج)

$$\left[\lim_{n \rightarrow 2} \frac{2n+5}{n+1} \right] \Rightarrow \frac{9}{3} = 3$$

(د)

$$\left[\lim_{n \rightarrow 2} \frac{2n+5}{n+1} \right] \Rightarrow \frac{9}{3} = 3$$

(الف)

$$\lim_{n \rightarrow 1} \frac{n-2}{n^2-4n+4} \Rightarrow \frac{-1}{0} \Rightarrow \begin{cases} 1^+ \Rightarrow \frac{-1}{0^+} \Rightarrow +\infty \\ 1^- \Rightarrow \frac{-1}{0^-} \Rightarrow -\infty \end{cases}$$

(ب)

$$\lim_{n \rightarrow 3} \frac{n-2}{n^2-4n+4} \Rightarrow \frac{1}{0} \Rightarrow \begin{cases} 3^+ \Rightarrow \frac{1}{0^+} \Rightarrow +\infty \\ 3^- \Rightarrow \frac{1}{0^-} \Rightarrow -\infty \end{cases}$$

(الف)

$$\lim_{n \rightarrow 3} \left[\frac{n-2}{n^2-4n+4} \right] \Rightarrow \begin{cases} 3^+ \Rightarrow \frac{1}{0^+} \Rightarrow +\infty \\ 3^- \Rightarrow \frac{1}{0^-} \Rightarrow -\infty \end{cases}$$

(ب)

$$\lim_{n \rightarrow \frac{1}{4}} \left[\frac{-1}{n^2} \right] \Rightarrow \left[\frac{-1}{\frac{1}{16}} \right] \Rightarrow [-16^-] \Rightarrow -17$$

$$n < \frac{1}{4} \rightarrow n^2 > \frac{1}{16} \rightarrow -n^2 < -\frac{1}{16} \rightarrow -\frac{1}{n^2} > -16$$

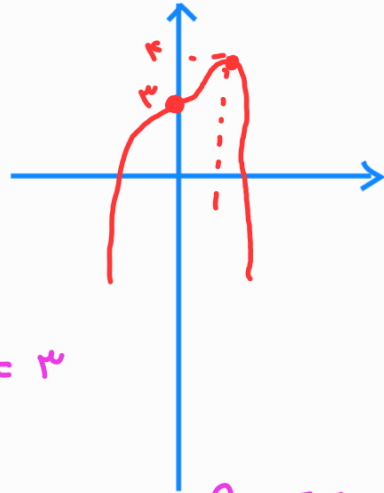
$$\lim_{n \rightarrow \frac{1}{4}} \left[-\frac{1}{n^2} \right] = -17$$

الف) مشتق میگیریم $\rightarrow 12x^2 - 12x^3 = 24x(1-x)$ ب) مشتق میگیریم $\rightarrow 12x^2 - 12x^3 = 24x(1-x)$ ج) $\lim_{x \rightarrow 1} [2x^3 - 4x^2 + 5] \rightarrow [2 - 4 + 5] = 3$	۶
الف) $\lim_{x \rightarrow 2} \begin{cases} x^+ \rightarrow \frac{x^2 - 1}{x^2 - 2} \rightarrow \frac{(x-1)(x+1)}{(x-2)(x+2)} \Rightarrow \frac{x^2 + x + 2x - 2}{x^2 + 2} \rightarrow \frac{x^2 + 3x - 2}{x^2 + 2} \end{cases}$ ب) $\lim_{x \rightarrow \pi} \begin{cases} x^+ \rightarrow \frac{\sin x}{\sin x} \Rightarrow \frac{-1}{2 \cos x} \Rightarrow \frac{-1}{-2} = \frac{1}{2} \rightarrow \text{باص} \\ x^- \rightarrow \frac{+\sin x}{\sin x} \Rightarrow \frac{1}{2 \cos x} \Rightarrow \frac{1}{-2} = -\frac{1}{2} \rightarrow \text{باص} \end{cases}$	۷
الف) $\lim_{x \rightarrow \frac{\pi}{2}} \begin{cases} x^+ \rightarrow \sqrt{\cos x} \rightarrow 0 \\ x^- \rightarrow \sqrt{\cos x} \rightarrow 0 \end{cases} \rightarrow \text{محدود}$ ب) $\lim_{x \rightarrow 0} \begin{cases} x^+ \rightarrow \sqrt{x} \rightarrow 0 \\ x^- \rightarrow \sqrt{x} \rightarrow 0 \end{cases} \rightarrow \text{محدود}$	۸
الف) مشتق میگیریم $\rightarrow \sin x \rightarrow \cos x$ در $x = 0$ $\rightarrow \cos 0 = 1$ $\rightarrow \frac{1}{0} \rightarrow \infty$ ب) $\lim_{x \rightarrow 2} \frac{x^2 - [x]}{x - [x]} \rightarrow \frac{2^2 - [2]}{2 - [2]} = \frac{0}{0} \rightarrow \frac{2x - 1}{x - 1} \rightarrow \frac{4 - 1}{2 - 1} = 3$	۹
الف) $y = 15x^2 - 15x^3 \Rightarrow 15x^2(1-x)$ ب) $y = 15x^2 - 15x^3 \Rightarrow 15x^2(1-x)$	۱۰

$$y = [\epsilon n^3 - 3n^2 + 3] \rightarrow y' = 3\epsilon n^2 - 6n \rightarrow y' = 0 \rightarrow 3\epsilon n^2(1-n) = 0$$

$$n=0, n=1$$

		*	1
y'	-	-	+
y	↘	↘	↗



$$\text{ا) } \lim_{n \rightarrow 1} [\epsilon n^3 - 3n^2 + 3] = [\epsilon^-] = 3$$

$$\text{ب) } \lim_{n \rightarrow 0} [\epsilon n^3 - 3n^2 + 3] = \begin{cases} n > 0 \rightarrow \lim[y] = [\epsilon^+] = 3 \\ n < 0 \rightarrow \lim[y] = [\epsilon^-] = 2 \end{cases}$$

$$n - 2\sqrt{n} \geq 0 \rightarrow \sqrt{n}(\sqrt{n} - 2) \geq 0 \quad \text{for } n \leq 4$$

$$\downarrow$$

$$n \geq 0 \quad \text{I}$$

$$\text{II} \quad n \geq 2$$

سوال ۸ - ب

$$\text{I} \cap \text{II} \quad n=0 \leq n \leq 2 \rightarrow \text{تبراهان ضروری نیست} \quad \lim_{n \rightarrow 0} \sqrt{n - 2\sqrt{n}} = \infty$$

$$\lim_{n \rightarrow 2^+} \frac{n^2 - 2}{n - 2} = \frac{(n-2)(n+2)}{n-2} = n+2 = 4$$

۹ - ب

$$\lim_{n \rightarrow 2^-} \frac{n^2 - 2}{n - 1} = \frac{2^2 - 2}{2 - 1} = 2$$