

الف) $\lim_{n \rightarrow 2^+} \frac{r_{n+1}}{n+1} = \frac{9}{3} = 3$ ب) $\lim_{n \rightarrow 2^-} \frac{r_{n+1}}{n+1} = 3$ ج) $\lim_{n \rightarrow 2} \frac{r_{n+1}}{n+1} = 3$

د) $\lim_{n \rightarrow 0} \frac{r_{n+1}}{[x^2]}$ $\begin{matrix} \nearrow \frac{0^+}{0^+} = 0^+ \\ \searrow \frac{0^-}{0^+} = 0^- \end{matrix}$

الف) $\lim_{n \rightarrow 3^-} [x] + 2 = 1 + 2 = 3$ ب) $\lim_{n \rightarrow 3^-} [r_n - 2] = [1] = 1$

ج) $\left[\lim_{n \rightarrow 3^-} r_n - 2 \right] = [1] = 1$ د) $\left[\lim_{n \rightarrow 3^+} r_n - 2 \right] = [1] = 1$

الف) $\lim_{n \rightarrow 2^-} \frac{r_n + 1}{r} = \frac{3 + 1}{3} = \frac{4}{3}$ ب) $\lim_{n \rightarrow 2^-} \left[\frac{r_{n+1}}{r} \right] = [5] = 5$

ج) $\left[\lim_{n \rightarrow 2^-} \frac{r_{n+1}}{r} \right] = [5] = 5$ د) $\left[\lim_{n \rightarrow 2^+} \frac{r_{n+1}}{r} \right] = [5] = 5$

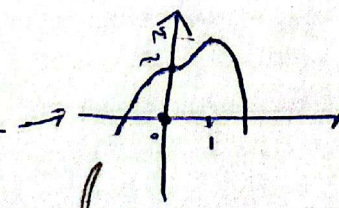
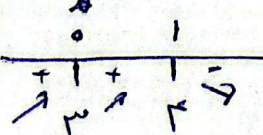
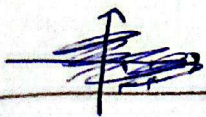
الف) $\lim_{n \rightarrow 1} \frac{n-1}{n^2-5n+4}$ $\begin{matrix} \nearrow \frac{0^-}{0^-} = +\infty \\ \searrow \frac{0^+}{0^-} = -\infty \end{matrix}$ ب) $\lim_{n \rightarrow 1} \frac{n-1}{(n-1)^2}$ $\begin{matrix} \nearrow \frac{-1}{0^+} = -\infty \\ \searrow \frac{-1}{0^-} = -\infty \end{matrix}$

الف) $\lim_{n \rightarrow 2} [-r_n] - [5x] = \begin{matrix} \nearrow -1 + 15 = 14 \\ \searrow -9 + 14 = 5 \end{matrix}$

ب) $\lim_{n \rightarrow (\frac{1}{2})^-} \left[\frac{-1}{n^2} \right] = [-16] = -16$

الف) $\lim_{n \rightarrow 1} [r_n^2 - r_n^2 + 3] = [3] = 3$

$y' = 12n^2 - 12n^3 = n^2(12 - 12n)$



$$\rightarrow \lim_{n \rightarrow \infty} [r_n - r_m] = [r^{\infty}] = r$$

$$\text{الف) } \lim_{n \rightarrow \infty} \frac{|x^n - 1|}{n^2 - r} = \frac{0}{0} \text{ type } \frac{(n-r)(n^2+r+r_m)}{(n-r)(n+r)} \xrightarrow{r^+} \frac{n^2+r+r_m}{n+r} = r$$

$$\xrightarrow{r^-} \frac{n^2-r-r_m}{n+r} = -r$$

$$\rightarrow \lim_{n \rightarrow \infty} \frac{|\sin n|}{\sin n} = \frac{0}{0} \text{ type } \frac{|\sin n|}{\sin n} \xrightarrow{h^+} \frac{1}{1} = 1$$

$$\xrightarrow{h^-} \frac{1}{-1} = -1$$

$$\text{الف) } \lim_{n \rightarrow \infty} \sqrt{\cos n} \xrightarrow{h^+} \sqrt{0^+} = 0$$

$$\xrightarrow{h^-} \sqrt{0^-} = \text{غير متناه}$$

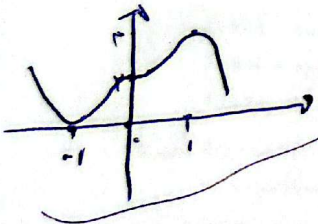
$$\rightarrow \lim_{n \rightarrow \infty} \sqrt{n - 2\sqrt{n}} \xrightarrow{0^-} \sqrt{0^- - 2\sqrt{0^-}} \rightarrow \sqrt{0^+}$$

$$\text{الف) } \lim_{n \rightarrow 0^+} \frac{(-1)^{\lfloor \sin n \rfloor}}{n^2 - n^2} = \frac{1}{n^2 - n^2} \xrightarrow{\% \text{ با كندى}} \frac{1}{\infty - \infty} = \frac{1}{(-\infty - \infty)} = \frac{1}{0^-} = -\infty$$

$$\rightarrow \lim_{n \rightarrow \infty} \frac{n^2 - [n^2]}{n - [n]} \xrightarrow{r^+} \frac{n^2 - r^2}{n - r} = \frac{(n+r)(n-r)}{(n-r)} = r$$

$$\xrightarrow{r^-} \frac{n^2 - r^2}{n - 1} = \frac{1}{1} = 1$$

$$\text{الف) } y = 5n^2 - 2n^3 + 2 \rightarrow y' = 10n - 6n^2 = n(10 - 6n^2) \rightarrow \frac{-1}{2} \frac{0}{2} \frac{-1}{2}$$



$$\text{بیشترین و کمترین } \Delta C \rightarrow t^2 - 2t + 3 = (t-1)(t+3)$$

$$y = n^2 - 2n^2 + 3 \rightarrow y' = 2n - 4n = 2n(n-2) \rightarrow \frac{-1}{2} \frac{2}{2} \frac{-1}{2}$$

