

الف) $\lim_{x \rightarrow 3} \frac{(x-3)^2}{x} = \frac{0}{3} = 0$

ب) $\lim_{x \rightarrow 3} \frac{9}{x^2} = \frac{9}{9} = 1$

ج) $\lim_{x \rightarrow 0} \frac{\cos x}{x}$ $\rightarrow$ (م)

د) $\begin{cases} 0^+ \rightarrow +\infty \\ 0^- \rightarrow -\infty \end{cases} \Rightarrow$ حد ندارد

(۱) ۵

الف) $\lim_{n \rightarrow \infty} [n] = 1 \rightarrow 1-1 = 0$ ب) $\lim_{n \rightarrow \infty} [n-1] = 1-1 = 0$

ج) $\left[\lim_{n \rightarrow \infty} [n-1] \right] = 0$

د) $\left[\lim_{n \rightarrow \infty} [n-1] \right] = 1$

الف) $\lim_{n \rightarrow \infty} \frac{[n]}{n} = 1$

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

ج) $\left[\lim_{n \rightarrow \infty} \frac{[n]}{n} \right] = 1$

د) $\left[\lim_{n \rightarrow \infty} \frac{[n]}{n} \right] = 1$

الف) $\lim_{n \rightarrow \infty} \frac{n}{(n-1)(n-2)} = \frac{1}{n-1} \Rightarrow \begin{cases} 1^+ \Rightarrow \frac{1}{0^+} = +\infty \\ 1^- \Rightarrow \frac{1}{0^-} = -\infty \end{cases} \Rightarrow$ حد ندارد

ب) $\lim_{n \rightarrow \infty} \frac{n-1}{(n-2)^2} \Rightarrow \frac{n-1}{(n-2)^2} \Rightarrow \begin{cases} 2^+ \Rightarrow \frac{1}{0^+} = +\infty \\ 2^- \Rightarrow \frac{1}{0^-} = -\infty \end{cases} \Rightarrow -\infty$

الف) $\lim_{n \rightarrow -3} [-n] - [0n] \Rightarrow \begin{cases} -3^+ \Rightarrow 1-18 = -17 \\ -3^- \Rightarrow 9+14 = 23 \end{cases} \Rightarrow$ حد ندارد

ب) $\lim_{n \rightarrow -\frac{1}{4}} \left[\frac{1}{n} \right] \Rightarrow 24 \left\{ \frac{1}{14} \rightarrow \left[\frac{1}{24} \right] = -14 \right\}$

(۱.۵)

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

ب) $\lim_{n \rightarrow 0} [n^2 - n^4 + 3] = 0-0+3 = 3$

(۱.۵)

(الف) $\lim_{x \rightarrow 0} \frac{x^2 - 1}{x^2 - 4} \Rightarrow \begin{cases} x^2 \rightarrow \frac{0}{0} = \text{محدد} \\ x^2 \rightarrow \frac{0}{-4} = -\frac{1}{4} \end{cases} \Rightarrow \text{محدد}$

(1)

(ب) $\lim_{x \rightarrow \pi} \frac{|\sin x|}{\sin x} \Rightarrow \begin{cases} \pi^+ \Rightarrow \frac{0}{0} = \frac{1}{1} \\ \pi^- \Rightarrow \frac{0}{0} = -\frac{1}{1} \end{cases} \Rightarrow \text{محدد}$

(2)

(الف) $\lim_{x \rightarrow \frac{\pi}{2}} \cos x \Rightarrow \begin{cases} \frac{\pi}{2}^+ \Rightarrow \sqrt{0} = 0 \\ \frac{\pi}{2}^- \Rightarrow \sqrt{0} = 0 \end{cases} \Rightarrow \text{محدد}$

(1)

(ب) $\lim_{x \rightarrow 0} \sqrt{x - 2x} \Rightarrow \begin{cases} 0^+ \Rightarrow \sqrt{0} = 0 \\ 0^- \Rightarrow \sqrt{0} = 0 \end{cases} \Rightarrow \text{محدد}$

(2)

(الف) $\lim_{x \rightarrow 0} \frac{(-1)^{\lfloor \sin x \rfloor}}{x^2 - x^2} \Rightarrow \frac{(-1)^0}{0} = -\infty$

(9)

(ب) $\frac{x^2 - \lfloor x^2 \rfloor}{x - \lfloor x \rfloor} \Rightarrow \begin{cases} x^2 \rightarrow 1 \\ x \rightarrow 1 \end{cases}$

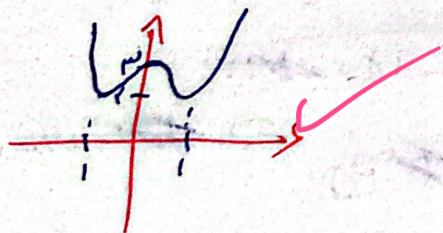
(2)

(الف) $\lim_{x \rightarrow 0} \frac{x^2 - \sin x}{x^2 - \cos x} \Rightarrow \frac{0 - 0}{0 - 1} = 0$

(1)

(ب) $x^2 - \lfloor x^2 \rfloor \Rightarrow x^2 - x^2 \Rightarrow x^2 - \lfloor x^2 \rfloor \Rightarrow 0$

$\frac{-1}{0} = -\infty$



(ب) $x < -\frac{1}{4} \rightarrow x^2 > \frac{1}{16} \rightarrow -x^2 < -\frac{1}{16} \rightarrow -\frac{1}{x^2} > -16$

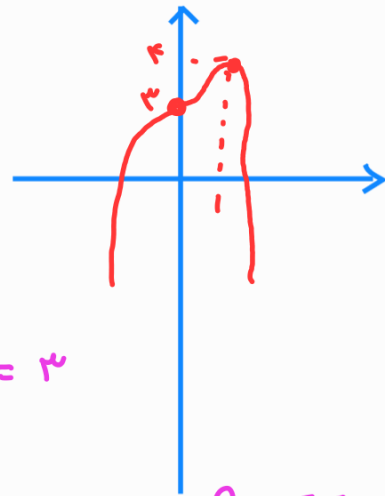
$\lim_{x \rightarrow \frac{1}{4}} \left[-\frac{1}{x^2} \right] = -16$

-4

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

$n=0, n=1$

	*		
	-	+	
y'	-	-	+
y	↘	↘	↗



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

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