

صالح کری

$$\lim_{n \rightarrow 2^+} \frac{2n+5}{n+1} = \frac{(2 \times 2)+5}{2+1} = \frac{9}{3} = 3 \text{ (الف)}$$

$$\lim_{n \rightarrow 2^-} \frac{2n+5}{n+1} = \frac{(2 \times 2)+5}{2+1} = \frac{9}{3} = 3 \text{ (ب)}$$

$$\lim_{n \rightarrow 2} \frac{2n+5}{n+1} = \frac{(2 \times 2)+5}{2+1} = \frac{9}{3} = 3 \text{ (ج)}$$

$$\lim_{n \rightarrow 0} \frac{2n+2}{[n]} = \frac{2}{1} = 2 \text{ (د)}$$

تعریف شده

$$\lim_{n \rightarrow 2^-} \varepsilon[n] - 2 = \varepsilon[2^-] - 2 = 6 \text{ (الف)}$$

$$\lim_{n \rightarrow 2^-} [\varepsilon n - 2] = [\varepsilon(2^-) - 2] = 9 \text{ (ب)}$$

؟ (ج)

$$\left[\lim_{n \rightarrow 2^+} \varepsilon n + 2 \right] = \lim_{n \rightarrow 2^+} \varepsilon n + 2 = 14 \text{ (د)}$$

$$\lim_{n \rightarrow 2^-} \frac{2[n] + 1}{2} = \frac{2 \times 2 + 1}{2} = \frac{5}{2}$$

(الف)

$$\lim_{n \rightarrow 2^-} \left[\frac{2n+1}{2} \right] = \left[\frac{2 \times 2 + 1}{2} \right] = \left[\frac{5}{2} \right] = 2 \text{ (ب)}$$

$$\left[\lim_{n \rightarrow 2^-} \frac{2n+1}{2} \right] = \frac{2 \times 2 + 1}{2} = 2 \text{ (ج)}$$

$$\left[\lim_{n \rightarrow 2^-} \frac{2n+1}{2} \right] = \frac{2 \times 2 + 1}{2} = 2 \text{ (د)}$$

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

$$\text{ب) } \lim_{n \rightarrow 2} \frac{n-5}{n^2-4n+4} = \frac{n-5}{(n-2)^2} \Rightarrow \frac{2-5}{(2^+-2)^2} = \frac{-3}{0^+} = -\infty$$

الف) $\lim_{n \rightarrow -2} [-2n] - [2n] \xrightarrow{-2^+} [-2(-2^+)] - [2(-2^+)] = 1 + 1 = 2$ - 2
 $\xrightarrow{-2^-} [-2(-2^-)] - [2(-2^-)] = 9 + 1 = 10$ - 10

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

ب) $\lim_{n \rightarrow 0} [2n^3 - 3n^2 + 3] \xrightarrow{n \rightarrow 0^+} \in [0, \dots, 27 + 3] = 30$
 $\xrightarrow{n \rightarrow 0^-} \in [0, \dots, 27 + 3] = 30$

الف) $\lim_{n \rightarrow 2} \frac{|n^3 - 8|}{n^2 - 4} \xrightarrow{n \rightarrow 2^+} \frac{(n-2)(n^2+2n+4)}{(n-2)(n+2)} = \frac{12}{4} = 3$ - 3
 $\xrightarrow{n \rightarrow 2^-} \frac{-(n-2)(n^2+2n+4)}{(n-2)(n+2)} = -\frac{12}{4} = -3$ - 3

ب) $\lim_{n \rightarrow \pi} \frac{|\sin n|}{\sin n} \xrightarrow{n \rightarrow \pi^-} \frac{\sin n}{\sin n} = \frac{1}{1} = 1$
 $\xrightarrow{n \rightarrow \pi^+} \frac{-\sin n}{\sin n} = \frac{-1}{1} = -1$

الف) $\lim_{n \rightarrow \frac{\pi}{2}} \sqrt{\cos n} \xrightarrow{\frac{\pi}{2}^+} \sqrt{0^+} = 0$ - 1
 $\xrightarrow{\frac{\pi}{2}^-} \sqrt{0^-} = \text{تعریف نشده}$

ب) $\lim_{n \rightarrow 0} \sqrt{n - 2\sqrt{n}} \xrightarrow{n \rightarrow 0^+} \sqrt{0^+ - 2\sqrt{0^+}} = \sqrt{0^-} = \text{تعریف نشده}$
 $\xrightarrow{n \rightarrow 0^-} \sqrt{0^- - 2\sqrt{0^-}} = \sqrt{0^-} = \text{تعریف نشده}$