

س ۱:

الف)  $\lim_{n \rightarrow 2^+} \epsilon n - 3 = \infty$

ب)  $\lim_{n \rightarrow 2^-} \epsilon n - 3 = \infty$

س ۲:

الف)  $\lim_{n \rightarrow 2^+} \lfloor n \rfloor - 3 = 2$

ب)  $\lim_{n \rightarrow 2^-} \lfloor n \rfloor - 3 = 1$

س ۳:

الف)  $\lim_{n \rightarrow 2^+} \lceil \epsilon n - 3 \rceil = \infty$

ب)  $\lim_{n \rightarrow 2^-} \lceil \epsilon n - 3 \rceil = 2$

س ۴:

الف)  $\lim_{n \rightarrow 2^+} \lfloor \epsilon n - 3 \rfloor = \infty$

ب)  $\lim_{n \rightarrow 2^-} \lfloor \epsilon n - 3 \rfloor = \infty$

الف)  $\lim_{n \rightarrow 3} \frac{\epsilon n - 3}{n - 3} = \begin{cases} \frac{9}{0^+} = +\infty \\ \frac{9}{0^-} = -\infty \end{cases}$  (صندار)

ب)  $\lim_{n \rightarrow 3} \frac{\epsilon n - 3}{(n - 3)^2} = \frac{9}{0^+} = +\infty$  (صندار ندارد)

الف)  $\lim_{n \rightarrow 3} \frac{\epsilon n - 3}{\sqrt{n - 3}} = \begin{cases} \frac{9}{0^+} = +\infty \\ 0 \end{cases}$  (صندار)

ب)  $\lim_{n \rightarrow 3} \frac{\epsilon n - 3}{\sqrt{n^2 - \epsilon n + 3}} = \begin{cases} \frac{9}{0^+} = +\infty \\ 0 \end{cases}$  (صندار)

الف)  $\lim_{n \rightarrow 3} \frac{\epsilon n - 3}{n^2 - \sqrt{n} + 11} = \begin{cases} \frac{11 - 3}{(0^+)(0^-)} = \frac{8}{0^-} = -\infty \\ \frac{9}{(0^-)(0^-)} = \frac{9}{0^+} = +\infty \end{cases}$  (صندار)

ب)  $\lim_{n \rightarrow 3} \frac{\epsilon n - 3}{[n - 3]} = \begin{cases} \frac{9}{0} = 0^- \\ \frac{9}{-1} = -9 \end{cases}$  (صندار)

$\lim_{x \rightarrow 3} [3x] + [-2x]$

$\left\{ \begin{array}{l} + \rightarrow [9^+] + [-6^-] = 9 + (-6) = 3 \\ - \rightarrow [9^-] + [-6^+] = 9 + (-6) = 3 \end{array} \right.$

$\lim_{n \rightarrow -4} [-\epsilon n] + [2n]$

$\left\{ \begin{array}{l} + \rightarrow [12^+] + [-8^-] = 4 \\ - \rightarrow [12^-] + [-8^+] = 4 \end{array} \right.$

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$\lim_{x \rightarrow 2} [x^2 - \epsilon x] \rightarrow [4 - 2] = [2] = 2$

$\lim_{n \rightarrow 3} [4n - n^2] = [12 - 9] = 3$

$\left\{ \begin{array}{l} + \rightarrow [4(3,1) - (3,1)^2] = [12 - 9] = 3 \\ - \rightarrow [4(2,9) - (2,9)^2] = 3 \end{array} \right.$

$\lim_{n \rightarrow 2} \frac{|n-2|}{n^2 - 2n + 2}$

$\left\{ \begin{array}{l} + \rightarrow \frac{n-2}{(n-2)(n-1)} = \frac{1}{n-1} = \frac{1}{1} = 1 \\ - \rightarrow \frac{-(n-2)}{(n-2)(n-1)} = \frac{-1}{1} = -1 \end{array} \right.$

$\lim_{x \rightarrow 1} \frac{x - [x]}{(x-1)(x+1)}$

$\left\{ \begin{array}{l} + \rightarrow \frac{1-1}{(1-1)(1+1)} = \frac{0}{0} = -\infty \\ - \rightarrow \frac{1-0}{(1-1)(1+1)} = \frac{1}{0^-} = -\infty \end{array} \right.$