

الف) $\lim_{n \rightarrow 2^+} \frac{n+0}{n+1} = \frac{2}{3} = \frac{2}{3}$ ✓

ب) $\lim_{n \rightarrow 2^-} \frac{n+0}{n+1} = \frac{2}{3} = \frac{2}{3}$ ✓

ج) $\lim_{n \rightarrow 2} \frac{n+0}{n+1} = \frac{2}{3} = \frac{2}{3}$ ✓

د) $\lim_{n \rightarrow 0} \frac{n+1}{[n^2]} = \frac{1}{0}$ ∞ ✓

الف) $\lim_{n \rightarrow 4^-} [n-2] = 4-2 = 2$ ✓

ج) $[\lim_{n \rightarrow 4^-} (n-2)] = [2] = 2$ ✓

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

د) $[\lim_{n \rightarrow 4^+} (n-2)] = [2] = 2$ ✓

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

ب) $\lim_{n \rightarrow 2^+} \frac{[n]+1}{2} = \frac{2}{2} = 1$ ✓

ج) $[\lim_{n \rightarrow 2^-} \frac{n+1}{2}] = [1.5] = 1$ ✓

د) $[\lim_{n \rightarrow 2^+} \frac{n+1}{2}] = [1.5] = 1$ ✓

الف) $\lim_{n \rightarrow 1} \frac{n-0}{n^2-4n+4} = \frac{n-0}{(n-0)(n-1)} \xrightarrow{n \rightarrow 1^+} \frac{-0}{0^+} = +\infty$ ✓



ب) $\lim_{n \rightarrow 2} \frac{n-1}{n^2-4n+4} = \frac{n-1}{(n-2)^2} = \frac{-1}{0^+} = -\infty$ ✓

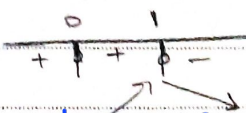
الف) $\lim_{n \rightarrow -1} [n] - [0n] \xrightarrow{n \rightarrow -1^+} [9^-] - [-10^+] = 9 - (-10) = 19$ ✓

$\xrightarrow{n \rightarrow -1^-} [9^+] - [-10^-] = 9 - (-14) = 23$ ✓

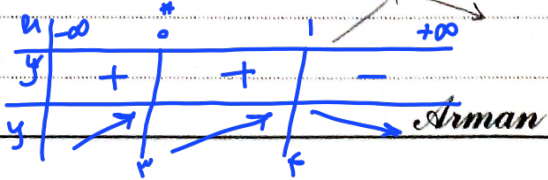
ب) $\lim_{n \rightarrow (-1)^-} \left[\frac{-1}{n^2} \right] = [-1] = -1$ ✓

$2x - \frac{1}{x} \rightarrow 2x > \frac{1}{14} \rightarrow -2x < -\frac{1}{14} \rightarrow -\frac{1}{2x} > -14$

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



$n=1 \rightarrow 1(1) - 1(1) + 1 = 1 \rightarrow [1^-] = 1$ ✓

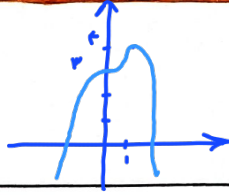


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حدس (ایمانور)



$$\lim_{n \rightarrow 0} (n^p - n^p + n^p) \xrightarrow{0^+} n^p - n^p = n^p (1 - 1) = 0$$

$$\frac{0}{+0+0} = \frac{0}{0}$$

$$\lim_{x \rightarrow 0^+} [x^+] = 0$$

$$\lim_{x \rightarrow 0^-} [x^-] = 0$$

$$n=0 \Rightarrow f(0) - f(0) + f = f \Rightarrow [f^+] = f$$

$$5) \lim_{n \rightarrow p} \frac{n^p - 1}{n^p - p} \xrightarrow{n \rightarrow p^+} \frac{n^p - 1}{n^p - p} = \frac{(n-p)(n^{p-1} + n^{p-2} + \dots + 1)}{(n-p)(n+p)} = \frac{1^p - 1}{1^p - p} = \frac{1-p}{1-p} = 1$$

$$n \rightarrow p^-$$

$$\frac{1-n^p}{n^p - p} = \frac{-1(n-p)(n^{p-1} + n^{p-2} + \dots + 1)}{(n-p)(n+p)} = \frac{-1^p}{1^p} = -1$$

✓/لید

(Y)

$$10) \lim_{n \rightarrow \pi} \frac{|\sin n|}{\sin n} \xrightarrow{n \rightarrow \pi^+} \frac{-\sin n}{\sin n} = \frac{-1}{1} = -1$$

$$n \rightarrow \pi^-$$

$$\frac{\sin n}{\sin n} = \frac{1}{1} = 1$$

✓/لید

$$15) \lim_{n \rightarrow \frac{\pi}{2}} \sqrt{\cos n} \xrightarrow{n \rightarrow \frac{\pi}{2}^+} \sqrt{0^+} = 0$$

$$n \rightarrow \frac{\pi}{2}^-$$

$$\sqrt{0^-} = 0$$

✓/لید

✓

$$20) \lim_{n \rightarrow 0} \sqrt{n - p\sqrt{n}}$$

$$n \rightarrow 0^+$$

$$n - p\sqrt{n} > 0 \Rightarrow \sqrt{n}(\sqrt{n} - p) > 0$$

$$\frac{0}{+0-0+} = \frac{0}{0}$$

$$n \rightarrow 0^+ \rightarrow 0$$

$$n \rightarrow 0^- \rightarrow 0$$

✓/لید

(Y)

$$25) \lim_{n \rightarrow 0^+} \frac{[\sin n]}{n^p - n^p} = \frac{(-1)^0}{0^+ - 0^+} = \frac{-1}{0^+} = -\infty$$

$$n^p (n-1) \xrightarrow{0^+} \frac{0}{-0-0+} = \frac{0}{0}$$

✓

(1,2,0)

$$30) \lim_{n \rightarrow p} \frac{n^p - [n^p]}{n - [n]} \xrightarrow{n \rightarrow p^+} \frac{n^p - p}{n - p} = \frac{(n-p)(n^{p-1} + n^{p-2} + \dots + 1)}{n - p} = 1$$

$$n \rightarrow p^-$$

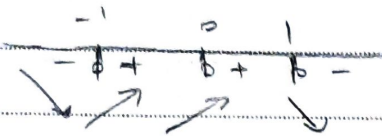
$$\frac{n^p - p}{n - 1} = \frac{p - p}{1 - 1} = \frac{0}{0}$$

✓/لید

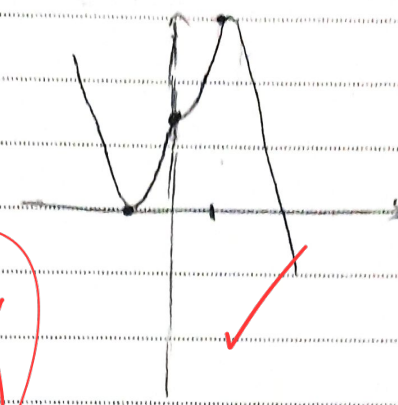
Arman

الف) $y = an^2 - bn + c \rightarrow y' = 2an - b = 2a(n - \frac{b}{2a})$

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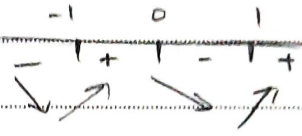
$n = 1 \rightarrow y = 4$
 $n = 0 \rightarrow y = 2$
 $n = -1 \rightarrow y = 0$



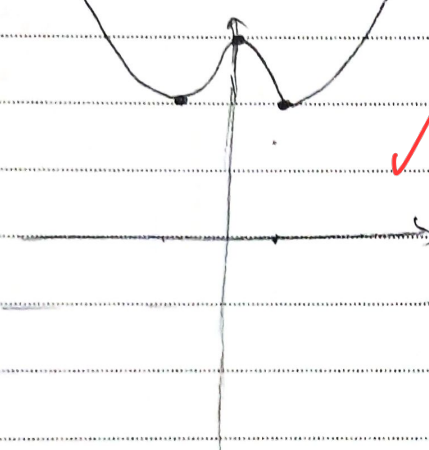
✓

ب) $y = n^2 - 2n + 2 \rightarrow y' = 2n - 2 = 2(n - 1)$

10



$n = 1 \rightarrow y = 2$
 $n = 0 \rightarrow y = 2$
 $n = -1 \rightarrow y = 2$



✓

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