

۱۴۰۴ / ۹ / ۱۷

کلیف ۱۸

نوع تستی

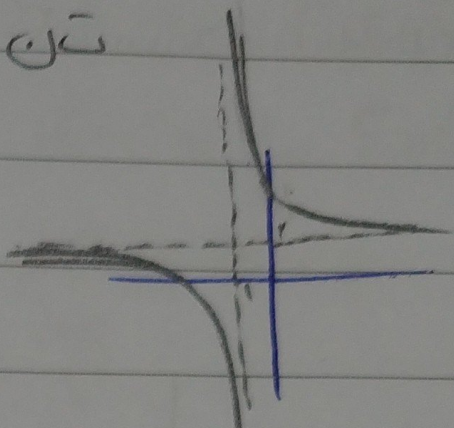
۱۹ آزمون

الف) $\lim_{x \rightarrow 0} \frac{x+5}{x+1} = 5$

ب) $\lim_{x \rightarrow 0} \frac{x+5}{x} = 5$

ج) $\lim_{x \rightarrow 0} \frac{x+5}{x+1} = 5$

د) $\lim_{x \rightarrow 0} \frac{x}{x} = 1$



الف) $\lim_{x \rightarrow 0} [f(x)] = 4$

ب) $\lim_{x \rightarrow 0^-} [f(x)] = 4$

ج) $\lim_{n \rightarrow \infty} [f(n)] = 10$

د) $\lim_{n \rightarrow \infty} [f(n)] = 10$

الف) $\lim_{n \rightarrow \infty} \frac{f(n)+1}{n} = 1/5$

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

ع) $\lim_{n \rightarrow \infty} \frac{f(n+1)}{n} = 2$

د) $\lim_{n \rightarrow \infty} \frac{f(n+1)}{n} = 2$

الف) $\lim_{x \rightarrow 1} \frac{x-5}{x^2-4} = +\infty$

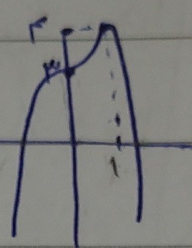
$\frac{1}{x-4}$

ب) $\lim_{n \rightarrow \infty} \frac{n-5}{n^2+4} = -\infty$

$\frac{1}{n^2}$

$$\text{ا) } \lim_{x \rightarrow -2} \frac{[-3x] - [5x]}{x^2} \begin{cases} \nearrow 9 - (-15) = 24 \\ \nwarrow -10 - (-14) = 24 \end{cases} \quad \text{①} \quad -2$$

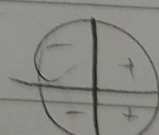
$$\text{ب) } \lim_{x \rightarrow (-\frac{1}{2})^-} \left[\frac{1}{x^2} \right] = -14 \quad | \quad \text{ملاحظة: } x < -\frac{1}{2} \rightarrow x^2 < \frac{1}{4} \rightarrow \frac{1}{x^2} > 4$$

$$\text{ا) } \lim_{x \rightarrow 1} [5x^3 - 3x^2 + 3] \begin{cases} \nearrow 5 - 3 + 3 = 5 \\ \nwarrow 5 - 3 + 3 = 5 \end{cases}$$


$$\text{ب) } \lim_{n \rightarrow \infty} [5n^3 - 3n^2 + 3] \begin{cases} \nearrow \infty \\ \nwarrow \infty \end{cases}$$

$$\text{ا) } \lim_{n \rightarrow 1} \frac{1}{x^2 - 1} \begin{cases} \nearrow \frac{x^2 - 1}{x^2 - 1} = \frac{(x-1)(x+1)}{(x-1)(x+1)} = 1 \\ \nwarrow \frac{1 - x^2}{x^2 - 1} = \frac{-(x-1)(x+1)}{(x-1)(x+1)} = -1 \end{cases}$$

$$\text{ا) } \lim_{n \rightarrow \pi} \frac{|\sin x|}{\sin 2x} \begin{cases} \nearrow \frac{-\sin x}{2 \sin x \cos x} = \frac{-1}{2 \cos x} = \frac{1}{2} \\ \nwarrow \frac{\sin x}{2 \sin x \cos x} = \frac{1}{2 \cos x} = -\frac{1}{2} \end{cases} \quad \text{②}$$

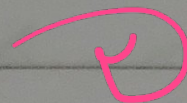
$$\text{ا) } \lim_{n \rightarrow \frac{\pi}{2}} \sqrt{\cos n} \begin{cases} \nearrow \frac{\pi}{2} \\ \nwarrow \frac{\pi}{2} \end{cases}$$


$$\text{ب) } \lim_{x \rightarrow \infty} \sqrt{x} - \sqrt{x} \begin{cases} \nearrow \infty \\ \nwarrow \infty \end{cases}$$

D: $x - 2\sqrt{x}$
 $(\sqrt{x} - 1)^2 - 1$
 $x > 4$

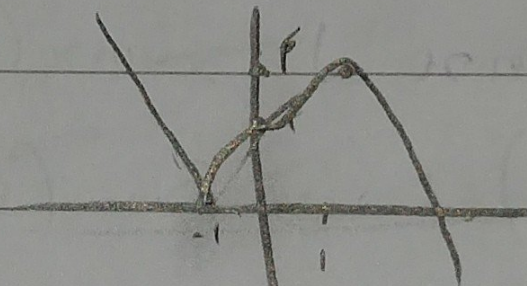
$$\text{ا) } \lim_{n \rightarrow \infty} \frac{[-\sin x]}{x^2 - x} = \frac{1}{x^2(x-1)} = 0$$

ب) $\lim_{x \rightarrow 1} \frac{x^r - [x^r]}{x - 1} = \frac{x^r - 1}{x - 1} = 1$

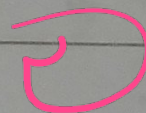


الف) $y = \omega x^r - 1 x^{\omega} + 1 \rightarrow y' = \omega x^{r-1} - 1 \omega x^{\omega-1} = \omega x^{r-1} (1-x) (1+x) - 1$

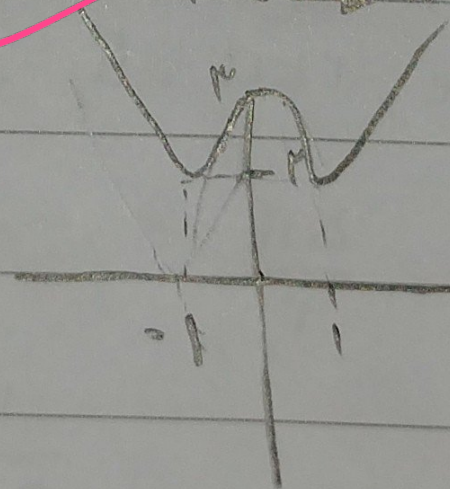
x	-1	0	1	
y	-	+	+	-
y'	↓	↗	↘	↓



ب) $x^r - 1 x^r + 1 \rightarrow y' = r x^{r-1} - 1 x^{r-1} = x^{r-1} (x^r - 1)$



x	-1	0	1	
y'	-	+	-	+
y	↓	↗	↓	↗



$$\lim_{n \rightarrow -3} [-r_n] - [a_n] \rightarrow \lim_{n \rightarrow -3^+} [-r_n] - [a_n] = 1 - (-15) = 16$$

$$\hookrightarrow \lim_{n \rightarrow -3^-} [-r_n] - [a_n] = 9 - (-14) = 23$$

د - الف

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

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

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