

تعريف 19, 20, 21, ...
 على أساس ما تقدم سره A

11, 15

الف) $\lim_{x \rightarrow r^+} f(x) - r = 0 \Rightarrow \lim_{x \rightarrow r^-} f(x) - r = a$ (1)

الف) $\lim_{n \rightarrow r^+} f[n] - r = 0 \Rightarrow \lim_{n \rightarrow r^-} f[n] - r = 1$ (2)

الف) $\lim_{n \rightarrow r^+} [f_n - r] = 0 \Rightarrow \lim_{n \rightarrow r^-} [f_n - r] = c - r$ (3)

الف) $[\lim_{n \rightarrow r^+} f_n - r] = a \Rightarrow [\lim_{n \rightarrow r^-} f_n - r] = c - r$ (4)
 $[a] = a$

الف) $\lim_{n \rightarrow r} \frac{f_n - r}{n - r} \begin{matrix} \nearrow \frac{a/1 \dots}{0} = +\infty \\ \searrow \frac{1/1 \dots}{-0} = -\infty \end{matrix}$ (5)

$\Rightarrow \lim_{n \rightarrow r} \frac{f_n - r}{(n - r)^2} \begin{matrix} \nearrow \frac{a/1 \dots}{0} = +\infty \\ \searrow \frac{1/1 \dots}{-0} = +\infty \end{matrix} \quad \lim_{n \rightarrow r} \frac{f_n - r}{(n - r)^2} = +\infty$

الف) $\lim_{n \rightarrow r} \frac{f_n - r}{\sqrt{n - r}} \begin{matrix} \nearrow +\infty \\ \searrow \end{matrix}$ (6)
 ضلع ارضه $\Rightarrow r - r < r$

$\Rightarrow \lim_{x \rightarrow r} \frac{f_n - r}{\sqrt{x^2 - f_n + r}} \rightarrow x^2 - f_n + r = (x - 1)(x - r)$

$\nearrow \frac{2x}{0} = +\infty$

\searrow ضلع ارضه \Rightarrow $\lim_{n \rightarrow r} \frac{f_n - r}{\sqrt{x^2 - f_n + r}} = +\infty$

$$\lim_{x \rightarrow r} \frac{|x-r|}{x^r - r^r} \xrightarrow{r^+} \frac{0^+}{0^+} \xrightarrow{\text{L'Hôpital}} \frac{|x-r|}{(x-r)(x-1)} \approx 1 \quad (1.)$$

$$\xrightarrow{r^-} \frac{0^-}{0^+} \xrightarrow{\text{L'Hôpital}} \frac{-(x-r)}{(x-r)(x-1)} = -1$$

$$\Rightarrow \lim_{x \rightarrow 1} \frac{x - [x]}{x^x - 1} \xrightarrow{1^+} \frac{0^+}{0^+} \xrightarrow{\text{L'Hôpital}} \frac{x-1}{(x-1)(x+1)} = \frac{1}{x}$$

$$\xrightarrow{1^-} \frac{1}{0^+} = +\infty \quad -\infty$$