

الف) $\lim_{x \rightarrow 3^+} \frac{x+1}{x+1} \rightarrow \frac{4}{4} = 1$

ب) $\lim_{x \rightarrow 3^-} \frac{x+1}{x+1} \rightarrow \frac{4}{4} = 1$

ج) $\lim_{x \rightarrow 3} \frac{x+1}{x+1} \rightarrow \frac{4}{4} = 1$

د) $\lim_{x \rightarrow 3} \frac{x+1}{[x]}$ $\rightarrow \begin{cases} 0^+ \rightarrow \frac{4}{0^+} \rightarrow \infty \\ 0^- \rightarrow \frac{4}{0^-} \rightarrow -\infty \end{cases}$

الف) $\lim_{x \rightarrow 3} \frac{x[x]+1}{x} \rightarrow \frac{3 \cdot 3 + 1}{3} = \frac{10}{3}$

ب) $\lim_{x \rightarrow 3} \left[\frac{x+1}{x} \right] \rightarrow \left[\frac{4}{3} \right] = [1.33] = 1$

ج) $\left[\lim_{x \rightarrow 3} \frac{x+1}{x} \right] \rightarrow 1$ د) $\left[\lim_{x \rightarrow 3^+} \frac{x+1}{x} \right] = [1.33] = 1$

الف) $\lim_{x \rightarrow 1} \frac{x-1}{x^2-9x+4} \rightarrow \frac{x-1}{(x-1)(x-4)} \rightarrow \frac{1}{x-4} \rightarrow \begin{cases} 1^+ \rightarrow \frac{1}{-3} = -\frac{1}{3} \\ 1^- \rightarrow \frac{1}{-5} = -\frac{1}{5} \end{cases}$

ب) $\lim_{x \rightarrow 1} \frac{x-1}{x^2-9x+4} \rightarrow \frac{x-1}{(x-1)(x-4)} \rightarrow \frac{x-1}{(x-1)^2} \rightarrow \begin{cases} 1^+ \rightarrow \frac{1}{0^+} = +\infty \\ 1^- \rightarrow \frac{1}{0^-} = -\infty \end{cases}$

الف) $\lim_{x \rightarrow 3} f[x] - 2 \rightarrow f[3] - 2 = 4 - 2 = 2$

ب) $\lim_{x \rightarrow 3} [f(x)] \rightarrow [1.5] = 1$

ج) $\left[\lim_{x \rightarrow 3} f(x) \right] \rightarrow 1.5$

د) $\left[\lim_{x \rightarrow 3^+} f(x) \right] \rightarrow 1.5$

الف) $\lim_{x \rightarrow 3} [-2x] - [5x] \rightarrow \begin{cases} 3^+ \rightarrow [1] - [15] = 1 - 15 = -14 \\ 3^- \rightarrow [4] - [15] = 4 - 15 = -11 \end{cases}$

ب) $\lim_{x \rightarrow (-\frac{1}{4})} \left[\frac{-1}{2x} \right] \rightarrow -14$

$\lim_{x \rightarrow 1} [x^r - x^r + r]$ $\xrightarrow{3}$ $1^r - 1^r \rightarrow x^r(1 - 1/x) \rightarrow x^r \cdot 0 = 0$
 $x \rightarrow 1$


$\rightarrow) \lim_{n \rightarrow \infty} [a_n^r - a_n^s r] = 0$

$$\lim_{x \rightarrow r} \left| \frac{x^r - 1}{x^r - r} \right| \quad \begin{array}{l} \nearrow r^+ \rightarrow \frac{(x-r)(x^r + \epsilon + r_n)}{(x-r)(x+r)} = \frac{1r}{\epsilon} = r \\ \searrow r^- \rightarrow \frac{1-x^r}{(x-r)(x+r)} \rightarrow \frac{(r-\lambda)(\epsilon + x^r + r_n)}{(x-r)(x+r)} = r \end{array}$$

$\lim_{\theta \rightarrow \pi} \frac{|\sin \theta|}{\sin \theta}$
 $\theta \rightarrow \pi$



$\pi^+ \rightarrow \frac{-\sin \theta}{r \sin \theta \cos \theta} = \frac{-1}{r \cos \theta} = \frac{1}{r}$
 $\pi^- \rightarrow \frac{+\sin \theta}{r \sin \theta \cos \theta} = \frac{1}{r \cos \theta} = -\frac{1}{r}$

$\lim_{n \rightarrow \frac{\pi}{2}} \sqrt{\cos n}$

$\swarrow$
 $\frac{\pi}{2}^+$
 $\searrow$

$\frac{\pi}{2}^+ \rightarrow \sqrt{0^+} = 0$

$\swarrow$
 $\frac{\pi}{2}^-$
 $\searrow$

$\frac{\pi}{2}^- \rightarrow \sqrt{0^-} = 0$

$\lim_{n \rightarrow \infty} \sqrt{n - 2\sqrt{n}}$

$$\lim_{x \rightarrow 0^+} \frac{-1 \cdot [\sin x]}{x^c - x^r} \rightarrow \frac{-1 \cdot [x]}{x^c - x^r} \rightarrow \frac{(-1)^r}{x^c - x^r} = \frac{1}{x^c - x^r} = +\infty$$

$$\lim_{x \rightarrow r} \frac{x^r - [x]^r}{x - [x]} \begin{cases} \xrightarrow{r^+} \frac{x^r - t}{x - r} = \frac{(x-r)(x+r)}{x-r} = x+r = r^+ \\ \xrightarrow{r^-} \frac{x^r - r}{x - r} = \frac{1}{1} = 1 \end{cases}$$

$y \cdot \Delta x^r - r x^{r-1} + r \xrightarrow{G^{-1}} 1 \Delta x^r - 1 \Delta x^r \rightarrow 1 \Delta x^r (0 - x^r) \begin{cases} x=0 \\ x=1 \\ x=-1 \end{cases} \rightarrow \frac{-1+1+1}{-1+1+1} = 1$
 به سطر برای $x=1$ و $x=-1$

$y = x^4 - 2x^2 + 1$

$x^4 - 2x^2 + 1 = (x^2 - 1)^2$

$x^2 - 1 = 0$

$x = 1, x = -1$

نقاط برای رسم تابع می باشد