

الف - ۱

ب

۱۸۵

$$\lim_{x \rightarrow 1^+} \frac{x^2 + \omega}{x+1} = \frac{2}{2} = 1$$

(الف - ۱)

$$\lim_{x \rightarrow 1^-} \frac{x^2 + \omega}{x+1} = \frac{2}{2} = 1$$

(ب)

$$\lim_{x \rightarrow 1} \frac{x^2 + \omega}{x+1} = 1$$

(ج)

$$\lim_{x \rightarrow 0} \frac{x^2 + v}{x^2 + w} \begin{matrix} \nearrow \text{مربع} \\ \searrow \text{مربع} \end{matrix}$$

(د)

$$\lim_{x \rightarrow 0} f(x) = 1$$

(۲ - الف)

$$\lim_{x \rightarrow 0} (f(x) - 1) = 0$$

(ب)

(ج)

$$\lim_{x \rightarrow 0} (f(x) - 1) = 1$$

(د)

$$\lim_{x \rightarrow 0} (f(x) - 1) = 1$$

(۳ - الف)

$$\lim_{x \rightarrow 0} \frac{f(x) + 1}{x} = \frac{1}{x}$$

(ب)

$$\lim_{x \rightarrow 0} \left(\frac{f(x) + 1}{x} \right) = \left(\frac{1}{x} \right) = \infty$$

(ج)

$$\lim_{x \rightarrow 0} \left(\frac{f(x) + 1}{x} \right) = \infty$$

(د)

$$\lim_{x \rightarrow 0} \left(\frac{f(x) + 1}{x} \right) = \infty$$

$$\lim_{x \rightarrow 1} \frac{x - a}{x^2 - 9x + a} = \frac{x - a}{(x - a)(x - 1)} \quad \begin{matrix} 1 & \omega \\ + & - & + \\ \hline & - & + \end{matrix} \rightarrow \begin{matrix} 1^+ & - & \infty \\ 1^- & + & \infty \end{matrix}$$

(الف - ٤)

(ب)

$$\lim_{x \rightarrow \infty} \frac{x - \infty}{x^2 - 9x + 9} \rightarrow \frac{x - \infty}{(x - \infty)^2} \rightarrow \frac{\infty}{+ \infty +} \quad \mu^+ > \mu^- = -\infty$$

(الف - ٥)

(ب)

$$\lim_{x \rightarrow -\infty} [x - \infty] - [9x + 9] \rightarrow -\infty^+ > 1 + 1\omega > \mu^+ \\ -\mu^- = 9 + 19 = 28$$

$$\lim_{x \rightarrow -\frac{1}{r}} \left[\frac{-1}{x^r} \right] \rightarrow x - \frac{1}{r} \Rightarrow \frac{1}{x} > -r \rightarrow \frac{1}{x} < 19 \rightarrow -\frac{1}{x} > -19 \rightarrow [-19] = -19$$

(الف - ٦)

$$\lim_{x \rightarrow 1} [x^{\mu} - x^{\nu} + \mu] \quad \begin{matrix} 1^- \rightarrow [x^{\mu}] = \mu \\ 1^+ \rightarrow [x^{\nu}] = \mu \end{matrix}$$

(ب)

$$\lim_{x \rightarrow 0} [x^{\mu} - x^{\nu} + \mu] \quad \begin{matrix} 0^+ \rightarrow [x^{\mu}] = \mu \\ 0^- \rightarrow [x^{\nu}] = \mu \end{matrix}$$

(الف - ٧)

$$\lim_{x \rightarrow \infty} \frac{|x^{\mu} - 1|}{x^{\nu} - \infty} \quad \begin{matrix} r^+ \rightarrow \frac{1}{x} = \mu \\ r^- \rightarrow -\frac{1}{x} = -\mu \end{matrix}$$

(ب)

$$\lim_{x \rightarrow \infty} \frac{|\sin x|}{\sin x} \quad \begin{matrix} r^+ \rightarrow \frac{\sin x}{r \sin x \cos x} = \frac{1}{-r} = -\frac{1}{r} \\ r^- \rightarrow \frac{\sin x}{r \sin x \cos x} = \frac{1}{-r} = -\frac{1}{r} \end{matrix}$$

(الف - ٨)

$$\lim_{x \rightarrow \frac{\pi}{2}} \sqrt{\cos x} \quad \begin{matrix} \frac{\pi}{2}^+ \rightarrow \sqrt{0^+} = 0 \\ \frac{\pi}{2}^- \rightarrow \sqrt{0^-} = 0 \end{matrix}$$

(ب)

$$\lim_{x \rightarrow 0} \sqrt{x - r\sqrt{x}} \quad \begin{matrix} 0^+ \rightarrow r\sqrt{x} \rightarrow \sqrt{x} \rightarrow \cdot \frac{1}{x} \\ 0^- \rightarrow \sqrt{x} \rightarrow \cdot \frac{1}{x} \end{matrix}$$

(الف - ٩)

$$\lim_{x \rightarrow 0^+} \frac{(-1)^{\cos x}}{x^{\mu} - x^{\nu}} = \frac{(-1)^0}{x^{\mu}(x - 1)} = \frac{1}{0^-} = -\infty$$

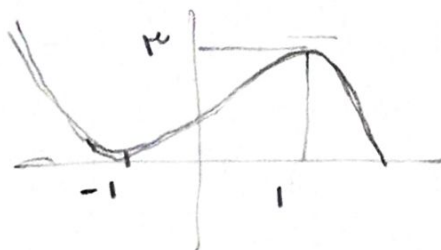
(ب)

$$\lim_{x \rightarrow \infty} \frac{x^r - [x^{\mu}]}{x - [x^{\nu}]} \quad \begin{matrix} r^+ \rightarrow \frac{(x - r)(x + r)}{x - r} = x + r = \mu \\ r^- \rightarrow \frac{x^r - \infty}{x - 1} = \mu \end{matrix}$$

$$\omega q^{\mu} - \epsilon q^{\omega} + \gamma \rightarrow \omega q^{\mu} - \epsilon q^{\omega} \rightarrow \omega q^{\mu} (1 - q^{\gamma}) \rightarrow 0, \pm 1$$

5, 6, 7, 8, 9, 10
(all -1.)

-1	0	+1
-	+	-



$$q^{\mu} - \gamma q^{\gamma} + \epsilon \rightarrow \epsilon q^{\mu} - \epsilon q^{\gamma} \rightarrow \epsilon q^{\mu} (q^{\gamma} - 1) \rightarrow 0 \rightarrow 0, \pm 1$$

-1	0	+1
-	+	-

