

$$x < -\frac{1}{4} \rightarrow x^2 > \frac{1}{4} \rightarrow -x^2 < -\frac{1}{4} \rightarrow -\frac{1}{x^2} > -14$$

$$\lim_{x \rightarrow -\frac{1}{4}} \left[-\frac{1}{x^2} \right] = -14$$

Subject:

Year: Month: Day: ()

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الف $\lim_{x \rightarrow -3} [-\frac{1}{x^2}] = [-\frac{1}{9}]$ $x \rightarrow -3^+ \rightarrow 14.14 =$ $x \rightarrow -3^- \rightarrow 14.14 =$

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

الف $\lim_{x \rightarrow 1} [x^3 - 3x^2 + 3] = 1 - 3 + 3 = 1$ $\lim_{x \rightarrow 1} [x^3] = 1$ $\lim_{x \rightarrow 1} [x^2] = 1$ $\lim_{x \rightarrow 1} [x] = 1$

ب $\lim_{x \rightarrow 0} [x^3 - 3x^2 + 3] = 0 - 0 + 3 = 3$ $\lim_{x \rightarrow 0^+} [x^3] = 0$ $\lim_{x \rightarrow 0^-} [x^3] = 0$

الف $\lim_{x \rightarrow 2} \frac{x^3 - 1}{x^2 - 1} = \frac{(x-1)(x^2+x+1)}{(x-1)(x+1)} = \frac{x^2+x+1}{x+1} = \frac{4+2+1}{3} = \frac{7}{3}$ $\lim_{x \rightarrow 2^-} \frac{x^3 - 1}{x^2 - 1} = \frac{7}{3}$ $\lim_{x \rightarrow 2^+} \frac{x^3 - 1}{x^2 - 1} = \frac{7}{3}$

ب $\lim_{x \rightarrow \pi} |\sin x| = 0$ $\lim_{x \rightarrow \pi^+} \frac{\sin x}{x} = \frac{-1}{\pi} = -\frac{1}{\pi}$ $\lim_{x \rightarrow \pi^-} \frac{\sin x}{x} = \frac{-1}{\pi} = -\frac{1}{\pi}$

الف) $\lim_{x \rightarrow \frac{\pi}{2}} \cos x = 0^+ \rightarrow 0$

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

ب) $\lim_{x \rightarrow 0} \sqrt{x-2}\sqrt{x} = 0^+ \rightarrow \sqrt{0^+ - 2}\sqrt{0^+} = 0$

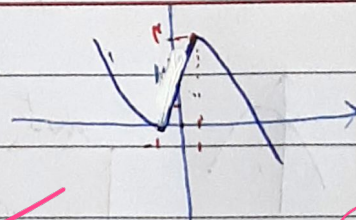
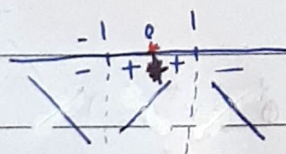
$\sqrt{0^+ - 2}\sqrt{0^+} = \sqrt{-2} \cdot 0 = 0$

الف) $\lim_{x \rightarrow 0^+} \frac{(-1)^{\sin x}}{x^3 - x^2} = \frac{(-1)^0}{(0^+)^3 - (0^+)^2} = \frac{1}{0^-} = -\infty$

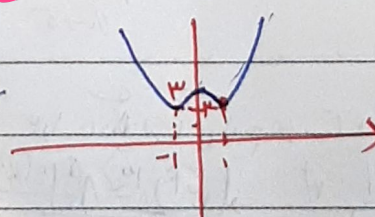
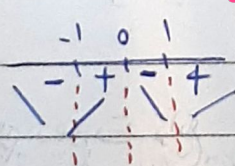
ب) $\lim_{x \rightarrow 2} \frac{x^2 - [x]}{x - 2} = \frac{2^2 - 2}{2 - 2} = \frac{2}{0} = \infty$

$\frac{2^2 - 3}{2 - 1} = \frac{4 - 3}{2 - 1} = \frac{1}{1} = 1$

الف) $\lim_{x \rightarrow 1} \frac{x^2 - 1}{x - 1}$



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



الف) $\lim_{x \rightarrow 2} \frac{x^2 + a}{x+1} = \frac{2(2) + a}{2+1} = 3$

ب) $\lim_{x \rightarrow 2} \frac{x^2 + a}{x+1} = \frac{2(2) + a}{2} = 3$

ج) $\lim_{x \rightarrow 0} \frac{x^2 + \sqrt{x}}{x^2} = \frac{0 + 0}{0} = 0$

د) $\lim_{n \rightarrow 2} \frac{n+5}{n+1} = \frac{9}{3} = 3$

ه) $\lim_{x \rightarrow 2} [x] - 2 = [2] - 2 = 0$

و) $\lim_{x \rightarrow 2^-} [x] = [1.9] = 1$

ز) $\lim_{x \rightarrow 2^-} \frac{x^2 + 1}{x} = 0$

ح) $\lim_{x \rightarrow 2^+} \frac{x^2 + 1}{x} = \infty$

ط) $\lim_{x \rightarrow 2} [x - 2] = 0$

ث) $\lim_{x \rightarrow 2^+} [x - 2] = 1$

ج) $\lim_{x \rightarrow 2^-} \frac{x^2 + 1}{x} = \frac{5}{2} = 2.5$

د) $\lim_{x \rightarrow 2^-} \left[\frac{x^2 + 1}{x} \right] = [2.5] = 2$

ه) $\lim_{x \rightarrow 2^-} \left[\frac{x^2 + 1}{x} \right] = 2$

و) $\lim_{x \rightarrow 2^+} \left[\frac{x^2 + 1}{x} \right] = \infty$

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

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