

$$\lim_{x \rightarrow 2} = \lim_{x \rightarrow 2^+} = \lim_{x \rightarrow 2^-} \left\{ f(x) = \frac{x+5}{x+1} = \frac{7}{3} = 3 \right. \quad \text{صدا دارد}$$

ج. = اف. = ب.

$$\lim_{x \rightarrow \infty} \frac{2x+7}{[x^2]} = \frac{2x+7}{\infty} = \text{تقریب شده} \quad \text{صدا دارد}$$

$$\text{اف.} \quad \lim_{x \rightarrow 3^-} = f(3) - 2 = 4$$

$$\text{ب.} \quad \lim_{x \rightarrow 3} = [f(3) - 2] = [1.0] = 9$$

$$\text{ج. و د.} \quad \left[\lim_{x \rightarrow 3^+} f(x-2) \right] = \left[\lim_{x \rightarrow 3^-} f(x-2) \right] = [1.0] = 1.0 \quad \text{صدا دارد}$$

$$\text{اف.} \quad \lim_{x \rightarrow 3^-} = \frac{3(2)+1}{2} = 3.5$$

$$\text{ب.} \quad \lim_{x \rightarrow 3^-} : \left[\frac{3(2)+1}{2} \right] = [1.0] = 9$$

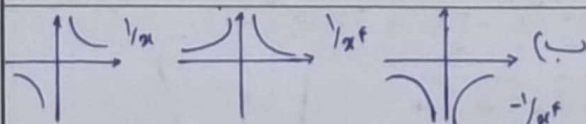
$$\text{ج. و د.} \quad \left[\lim_{x \rightarrow 3^-} \frac{3x+1}{2} \right] = \left[\lim_{x \rightarrow 3^+} \frac{3x+1}{2} \right] = 5 \quad \text{صدا دارد}$$

$$x^2 - 4x + 4 = (x-2)^2 \quad \text{ب.} \quad \text{صدا دارد}$$

$$\begin{aligned} \lim_{x \rightarrow 0^+} \frac{-1}{0^+} &= -\infty \\ \lim_{x \rightarrow 0^-} \frac{-1}{0^+} &= -\infty \end{aligned} \quad \text{صدا دارد}$$

$$x^2 - 4x + 4 = (x-2)^2 = 0$$

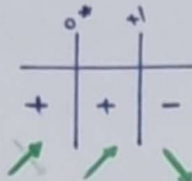
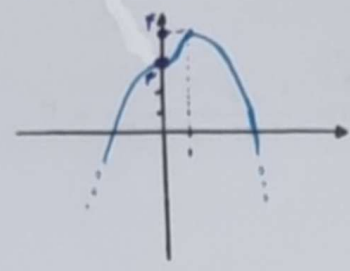
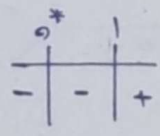
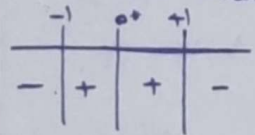
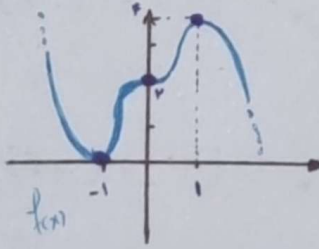
$$\begin{aligned} \frac{x^2 - 4x + 4}{(x-2)(x-1)} &= \frac{1}{x-1} \\ \lim_{x \rightarrow 1^+} \frac{1}{0^+} &= +\infty \\ \lim_{x \rightarrow 1^-} \frac{1}{0^-} &= -\infty \end{aligned} \quad \text{صدا دارد}$$



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

$$\lim_{x \rightarrow -1^+} : [9^-] - [-15^+] = 14 + 15 = 29$$

$$\lim_{x \rightarrow -1^-} : [9^+] - [-15^-] = 9 + 14 = 23$$

$f(x^3 - 3x^2 + 3) = 0$ $f'(x) = 12x^2 - 12x = 12x^2(1 - x)$  	$\lim_{x \rightarrow 1} [f(x)] = 3$ $\lim_{x \rightarrow 0^+} [f(x)] = 3$ $\lim_{x \rightarrow 0^-} [f(x)] = 3$
$\text{الف) } \lim_{x \rightarrow 2^+} \frac{x^3 - 1}{x^2 - 4} = \frac{(x-1)(x^2 + x + 1)}{(x-2)(x+2)}$ $= \frac{12}{8} = \frac{3}{2}$ $* \lim_{x \rightarrow 2^-} = \frac{-(x^3 - 1)}{x^2 - 4} = -\frac{3}{2}$	$\text{ب) } \lim_{x \rightarrow \pi^+} \frac{ \sin x }{\sin 2x} = \frac{-\sin x}{2 \sin x \cos x}$ $= \frac{-1}{2 \cos x} = +\frac{1}{2}$ $\lim_{x \rightarrow \pi^-} = \frac{\sin x}{2 \sin x \cos x} = -\frac{1}{2}$
$\text{الف) } \lim_{x \rightarrow \frac{\pi}{2}^+} \sqrt{\cos x} = \sqrt{0^+} = 0$ $* \lim_{x \rightarrow \frac{\pi}{2}^-} \sqrt{\cos x} = \sqrt{0^-} = \text{تعریف نشده}$	$\text{ب) } \lim_{x \rightarrow 0^-} \sqrt{x - 2\sqrt{x}} = \text{تعریف نشده}$ $\lim_{x \rightarrow 0^+} \sqrt{x - 2\sqrt{x}} = \sqrt{\frac{1}{1} - \frac{2}{1}} = \text{تعریف نشده}$
$\text{الف) } \lim_{x \rightarrow 0^+} [\sin x] = 0 \quad -1^0 = 1$ $\lim_{x \rightarrow 0^+} \frac{1}{x^3 - x^2} = \frac{1}{0^-} = -\infty$ $x^3 - x^2 = x^2(x-1)$ 	$\text{ب) } \lim_{x \rightarrow 2^+} \frac{x^2 - 4}{x - 2} = \frac{(x-2)(x+2)}{(x-2)} = x + 2$ $= 4$ $\lim_{x \rightarrow 2^-} \frac{x^2 - 3}{x - 1} = \frac{4 - 3}{2 - 1} = \frac{1}{1} = 1$
$f'(x) = 12x^2 - 12x = 12x^2(1 - x)$  	$f'(x) = 12x^2 - 12x = 12x^2(1 - x)$ 