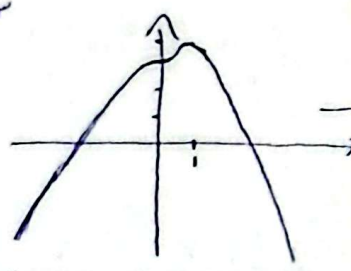
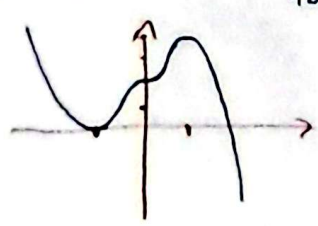


۱) $\lim_{x \rightarrow 2^+} \frac{2x+5}{x+1} = \frac{9}{3} = 3$	۲) $\lim_{x \rightarrow 2^-} \frac{2x+5}{x+1} = \frac{9}{3} = 3$	۱
۲) $\lim_{x \rightarrow 2} \frac{2x+5}{x+1} = \frac{9}{3} = 3$	۳) $\lim_{x \rightarrow 0} \frac{2x+7}{x^2} = \frac{7}{0} = \text{ت.ن.م}$	
۱) $\lim_{x \rightarrow 2^-} f(x) - 2 = f(2) - 2 = 9$	۲) $\lim_{x \rightarrow 2^-} [f(x) - 2] = [10^-] = 9$	۲
۲) $\lim_{x \rightarrow 2} [f(x) - 2] = [10] = 10$	۳) $\lim_{x \rightarrow 2^+} [f(x) - 2] = [10] = 10$	
۱) $\lim_{x \rightarrow 2^-} \frac{3[x]+1}{2} = \frac{3(2)+1}{2} = \frac{7}{2}$	۲) $\lim_{x \rightarrow 2^-} [\frac{3x+1}{2}] = [\frac{10^-}{2}] = 5$	۳
۲) $\lim_{x \rightarrow 2^-} [\frac{3x+1}{2}] = [\frac{10}{2}] = 5$	۳) $\lim_{x \rightarrow 2^+} [\frac{3x+1}{2}] = [\frac{10}{2}] = 5$	
۱) $\lim_{x \rightarrow 1} \frac{x-5}{x^2-5x+6}$ $\left. \begin{array}{l} x \rightarrow 1^+ \rightarrow \frac{-4}{0^-} = +\infty \\ x \rightarrow 1^- \rightarrow \frac{-4}{0^+} = -\infty \end{array} \right\} \text{ت.ن.م}$ $+ \left - \right +$	۲) $\lim_{x \rightarrow 3} \frac{x-4}{x^2-5x+9}$ $\left. \begin{array}{l} x \rightarrow 3^+ \rightarrow \frac{-1}{0^+} = -\infty \\ x \rightarrow 3^- \rightarrow \frac{-1}{0^-} = +\infty \end{array} \right\} \text{ت.ن.م}$ $+ \left + \right $	۴
۱) $\lim_{x \rightarrow -3} [-3x] - [5x] = 9 - (-15) = 24$ $\left. \begin{array}{l} x \rightarrow -3^+ \rightarrow 9 - (-15) = 24 \\ x \rightarrow -3^- \rightarrow 9 - (-15) = 24 \end{array} \right\}$	۲) $\lim_{x \rightarrow (-\frac{1}{2})^-} [-\frac{1}{x^2}] = -16$ $x < -\frac{1}{2}$ $\frac{1}{x} > -2$ $\frac{1}{x^2} < 4 \rightarrow -\frac{1}{x^2} > -4$	

الف) $\lim_{x \rightarrow 1} [4x^3 - 3x^2 + 3]$ $\begin{cases} x \rightarrow 1^+ \\ x \rightarrow 1^- \end{cases}$ $\begin{pmatrix} 3 \\ 3 \end{pmatrix}$ مشتق $\downarrow$ $12x^2 - 6x$ در $x=1$ = 6 مثبت در این نقطه صاف است 	ب) $\lim_{x \rightarrow 0} [4x^3 - 3x^2 + 3]$ $\begin{cases} x \rightarrow 0^+ \\ x \rightarrow 0^- \end{cases}$ $\begin{pmatrix} 3 \\ 3 \end{pmatrix}$ 
الف) $\lim_{x \rightarrow 2} \frac{ x^2 - 1 }{x^2 - 4}$ $\begin{cases} x \rightarrow 2^+ \\ x \rightarrow 2^- \end{cases}$ $\frac{x^2 - 1}{x^2 - 4} = \frac{(x-1)(x+1)}{(x-2)(x+2)} = \frac{1}{4} \neq 3$ $\frac{1 - x^2}{x^2 - 4} = \frac{-(x-1)(x+1)}{(x-2)(x+2)} = \frac{-1}{4} = -\frac{1}{4}$	ب) $\lim_{x \rightarrow \pi} \frac{ \sin x }{\sin 2x}$ $\begin{cases} x \rightarrow \pi^+ \\ x \rightarrow \pi^- \end{cases}$ $\frac{-\sin x}{2 \sin x \cos x} = \frac{-1}{2 \cos x} = \frac{1}{2}$ $\frac{\sin x}{2 \sin x \cos x} = \frac{1}{2 \cos x} = -\frac{1}{2}$
الف) $\lim_{x \rightarrow \frac{\pi}{2}} \sqrt{\cos x}$ $\begin{cases} x \rightarrow \frac{\pi}{2}^+ \\ x \rightarrow \frac{\pi}{2}^- \end{cases}$ $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$	ب) $\lim_{x \rightarrow 0} \sqrt{x - 2\sqrt{x}}$ $\begin{cases} x \rightarrow 0^+ \\ x \rightarrow 0^- \end{cases}$ $\begin{pmatrix} 0 \\ 0 \end{pmatrix}$
الف) $\lim_{x \rightarrow 0^+} \frac{(-1)^{\lfloor \sin x \rfloor}}{x^3 - x^2}$ $= \frac{(-1)^0}{x^3 - x^2} = \frac{1}{x^3 - x^2} = \frac{1}{0^-} = -\infty$	ب) $\lim_{x \rightarrow 2} \frac{x^2 - [x^2]}{x - [x]}$ $\begin{cases} x \rightarrow 2^+ \\ x \rightarrow 2^- \end{cases}$ $\frac{x^2 - 4}{x - 2} = \frac{(x-2)(x+2)}{(x-2)} = x+2 = 4$ $\frac{x^2 - 1}{x - 1} = \frac{(x-1)(x+1)}{(x-1)} = x+1 = 3$
الف) $y = 5x^3 - 2x^2 + 2$ مشتق $\downarrow$ $y' = 15x^2 - 4x$ $\rightarrow \begin{matrix} -1 & 0 & 1 \\ 0 & +2 & +4 \end{matrix} \rightarrow -\infty$ 	ب) $y = x^4 - 2x^2 + 2$ مشتق $\downarrow$ $y' = 4x^3 - 4x \rightarrow \begin{matrix} -1 & 0 & 1 \\ +\infty & +2 & +2 \end{matrix} \rightarrow +\infty$ 