

۱۲ پیر

۱-  $\frac{f(a)-f(b)}{a-b} = \frac{f(x)-f(x)}{x-1} = \frac{1-\frac{a}{x}-1+\frac{a}{x}}{x} = \frac{a}{x^2}$

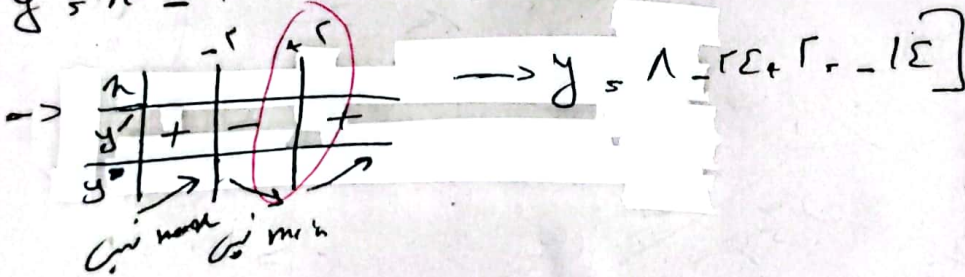
۲-  $f'(x) = \frac{a}{x^2} \rightarrow \frac{a}{x^2} = \frac{a}{2} \rightarrow x = \pm\sqrt{2}$

۳- معادله تانگنسی را به روش ضرایب مجهول پیدا کنید

$\tan \theta - \sin \theta + 11a = x \rightarrow \tan \theta - \sin \theta + 11a = 0$   
 $x < 0$   $x < 0$

$\Rightarrow a = \dots \rightarrow x^2 - \epsilon(11a) \leq 0 \rightarrow a \leq \frac{1}{\epsilon} \Rightarrow a \leq \pm \frac{1}{\epsilon}$   
 $x < 0 \Rightarrow \frac{\epsilon}{a} < 0 \rightarrow a < 0 \rightarrow a \leq -\frac{1}{\epsilon}$

$y = x^2 - 12x + 7 \rightarrow y' = 2x - 12 = 0 \rightarrow x = \pm 6$



$y = x^2 + ax^2 - rbx - \epsilon \rightarrow y' = 2x + 2ax - rb = 0$

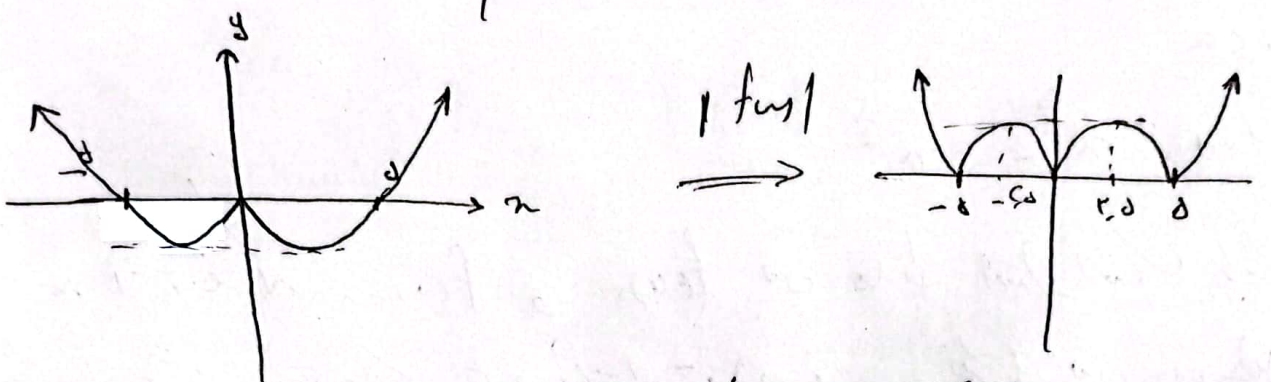
$\Rightarrow \begin{cases} x=0 \rightarrow -rb = 0 \rightarrow b = 0 \\ x=-\frac{1}{2} \rightarrow 1 - \epsilon - rb = 0 \rightarrow a = \frac{1}{2} \end{cases}$

$\Rightarrow f(0) = 0 + 0 + 0 - \epsilon = -\epsilon$   
 $\Rightarrow f(-\frac{1}{2}) = -\frac{1}{4} + \frac{1}{4} - \epsilon = 0$

محل:  $(-\frac{1}{2}, -\epsilon)$   
 $(-\frac{1}{2}, 0)$

$= \sqrt{(-\epsilon - 0)^2 + (0 - (-\frac{1}{2}))^2}$   
 $= \sqrt{\epsilon^2 + \frac{1}{4}}$   
 $= \frac{1}{2}\sqrt{4\epsilon^2 + 1}$

$$f(x) = |x - d| = \begin{cases} x - d & x \geq d \\ d - x & x < d \end{cases}$$



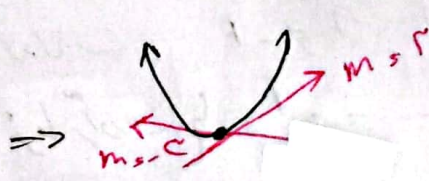
$\rightarrow$  minimum =  $\{-d, d\} \rightarrow m = 1$   
 $\rightarrow$  minimum =  $\{-d, 0, d\} \rightarrow n = 2$

$$f(x) = x(|x| + c) = \begin{cases} x + cx & x \geq 0 \\ -x + cx & x < 0 \end{cases}$$

$$\Rightarrow |f(x)| = \begin{cases} |x + cx| & x \geq 0 \\ |-x + cx| & x < 0 \end{cases} \Rightarrow \begin{cases} x^2 + cx & x \geq 0 \\ x^2 - cx & x < 0 \end{cases}$$

$\rightarrow$   $\begin{cases} x + c & x \geq 0 \rightarrow x = -c \\ -x + c & x < 0 \rightarrow x = c \end{cases}$

$$x = \begin{cases} f'(x) = c \\ f'(x) = -c \end{cases}$$



$y'$	-	+
$y$	$\searrow$	$\nearrow$

(x, y) ...

$$f(x) = \sqrt{x^c} |n-a| \rightarrow f(x) = \sqrt{x^c} (n-a)$$

•  $n < a$   
 $\rightarrow a >$

$$\rightarrow f(x) = n^{\frac{c}{2}} + a n^{\frac{c}{2}} \rightarrow f'(x) = -\frac{c}{2} n^{\frac{c}{2}-1} + \frac{c}{2} a n^{\frac{c}{2}-1}$$

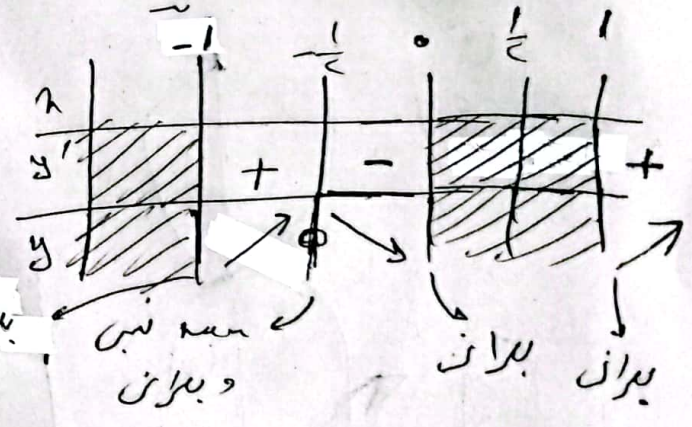
$$\rightarrow f'(x) = n^{\frac{c}{2}-1} \left( -\frac{c}{2} n + \frac{c}{2} a \right) \Rightarrow$$

پس نقطه  $n = \frac{ca}{c}$  و  $a = \frac{ca}{c}$  در نظر گرفته می شود

$$n = \frac{ca}{c} \rightarrow \sqrt{\frac{ca}{c}} \times \frac{ca}{c} = ca \rightarrow a = \frac{c}{c}, ca$$

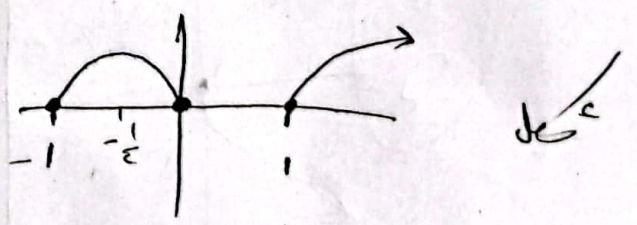
$$f(x) = \sqrt{m|x-1-x|} = \begin{cases} \sqrt{2x} & x \geq 0 \\ \sqrt{-2x} & x < 0 \end{cases}$$

$$\Rightarrow f'(x) = \begin{cases} \frac{m-1}{\sqrt{2x}} & x \geq 0 \\ -\frac{m-1}{\sqrt{-2x}} & x < 0 \end{cases}$$



$m > 1, h, K, E$

$$\Rightarrow \frac{kmah}{kn}, \frac{\Sigma + 0}{\Sigma - 0}, \dots$$



۹- در صورتی که  $m > 1$  پس  $\frac{m-1}{m} < 1$  و  $\frac{m-1}{m} > 0$  (صدا) زود اید:

$$f'(x) < 0 \quad | -m \leq 1 \rightarrow m \geq 0 \quad I$$

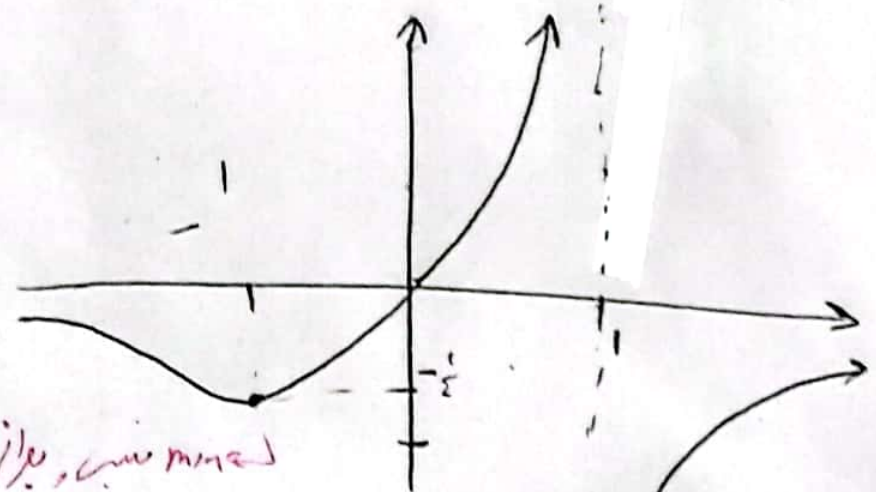
$$f'(x) = \frac{m^2 - m - 2}{(n+m-1)^2} < 0 \rightarrow m^2 - m - 2 < 0 \rightarrow \begin{cases} + & - & + \\ -1 & 2 \end{cases} \quad II$$

$$f(x) = \frac{x}{1-x^2} \quad \left\{ \begin{array}{l} \frac{x}{1-x} \quad x \geq 0 \\ \frac{x}{1+x} \quad x < 0 \end{array} \right.$$

- 1.

$$f'(x) = \begin{cases} \frac{(1-x^2) + x(-2x)}{(1-x^2)^2} = \frac{1-x^2}{(1-x^2)^2} & x \geq 0 \rightarrow x = 0 \text{ (نقطه صفر)} \\ \frac{(1+x^2) - x(2x)}{(1+x^2)^2} = \frac{1-x^2}{(1+x^2)^2} & x < 0 \rightarrow x = 0 \text{ (نقطه صفر)} \end{cases}$$

$x$	-1	0	+1	
$y'$	-	+	+	+
$y$	↘	↗	↗	↗
	0	$+\infty$	$-\infty$	



نقطه صفر، بیان

بیان نیست

یک نقطه بیان است

$$x = -1$$