

$$\frac{1 - \frac{a}{x^2} - (1-a)}{2} = \frac{a}{x^2} \rightarrow \frac{\frac{2a}{x^2}}{2} = \frac{a}{x^2} \rightarrow \frac{a}{x^2} = \frac{a}{x^2} - 1$$

$x \pm \sqrt{a}$    
 این زمان منفرجه   
 منفرجه   
  $x \pm \sqrt{a} \checkmark$    
  $\textcircled{2}$

$y = 2ax^2 - 2x + 11a \rightarrow y' = 4ax - 2 \xrightarrow{y=0} 4a = 1 \rightarrow a = \frac{1}{4}$   $\textcircled{1}$

$2ax^2 - 2x + 11a = 0 \rightarrow 2ax^2 - 4x + 11a = 0 \xrightarrow{\div 2} ax^2 - 2x + 5.5a = 0$    
  $ax^2 - 2x + 5.5a = 0 \xrightarrow{\Delta=0} 4 - 4(a)(5.5a) = 0 \rightarrow 4 - 22a^2 = 0 \rightarrow a^2 = \frac{1}{11} \rightarrow a = \pm \frac{1}{\sqrt{11}} \rightarrow a = \frac{-1}{\sqrt{11}}$    
  $a = \frac{1}{\sqrt{11}} \rightarrow$  این زمان منفرجه  $\rightarrow x^2 - 4x + 9 = (x-2)^2 = 0 \rightarrow$  این زمان مثبت

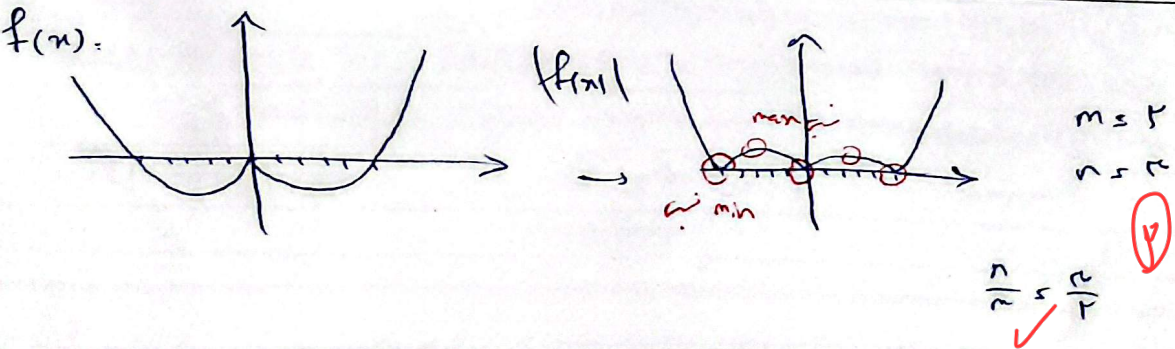
$y = x^2 - 12x + 2 \rightarrow y' = 2x^2 - 12 \rightarrow 2x^2 = 12 \rightarrow x = \pm 3$

	-3	3	
y'	+	-	+
y	↗	↘	↗
	max	min	

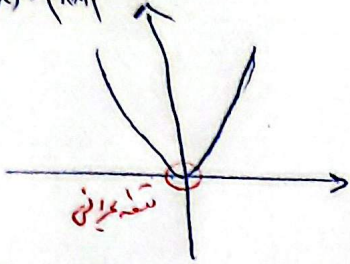
$\min = (3, -14)$    
 این زمان مثبت   
  $\textcircled{2}$

$y = x^2 + ax^2 - 2bx - c \rightarrow y' = 2x^2 + 2ax - 2b \xrightarrow{y=0} -2b = 0 \rightarrow b = 0$    
  $\xrightarrow{y=0} 12 - 4a = 0 \rightarrow a = 3$

نقطه ها:  $(0, -4), (-2, 0) \rightarrow$  این زمان مثبت   
  $\sqrt{4+16} = 2\sqrt{5}$    
  $\textcircled{2}$



$f(x) = |f(x)|$



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

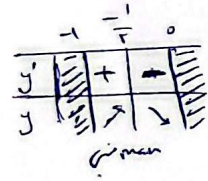
$\frac{1}{2} x^{-\frac{1}{2}} (a x - 1) = 0 \rightarrow x = \frac{1}{a}$

$f(\frac{1}{a}) = \frac{1}{\sqrt{a}} + \sqrt{\frac{1}{a} - \frac{1}{a}} = \frac{1}{\sqrt{a}}$

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$f(x) = \begin{cases} \sqrt{x^2-n} & x \geq 0 \\ \sqrt{-x^2-n} & x < 0 \end{cases} \rightarrow f'(x) = \begin{cases} \frac{x-1}{\sqrt{x^2-n}} & x > 1 \\ \frac{-x-1}{\sqrt{-x^2-n}} & -1 < x < 0 \end{cases}$



$\frac{km-n}{k-n} = \frac{1}{k} \Rightarrow 1$

$m = \dots$   
 $k = \{ \dots \}$   
 $n = \dots$

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$y' = \frac{m^2 - m + 2}{(n+m-1)^2} \leq 0 \rightarrow (m-2)(m+1) \leq 0$

$m = [-1, 2] \rightarrow \dots$

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

$f'(x) = 0 \rightarrow 1-x^2 = 0 \rightarrow x^* = \pm 1$

$Df(x) = 1 - x^2 = 0 \rightarrow x^2 = 1 \rightarrow \begin{cases} x \geq 0 & x^2 = 1 \rightarrow x = 1 \checkmark \\ x < 0 & -x^2 = 1 \rightarrow x^2 = -1 \times \end{cases}$

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