

$$\frac{f(x) - f(x_0)}{x - x_0} = f'(x_0) \quad \frac{1 - \frac{a}{x} - 1 + a}{x} = \frac{a}{x^2}$$

$\frac{a}{x} = \frac{a}{x^2} \rightarrow x = \pm \sqrt{x} \rightarrow \begin{cases} x = -\sqrt{x} \times \\ x = \sqrt{x} \checkmark \end{cases}$

1, 75

$f'(x) = 1 \rightarrow \frac{d}{dx} (ax - a) = 1 \rightarrow \frac{a}{x} = 1 \rightarrow a = x \rightarrow y = \frac{x}{a}$

$\Delta = 0 \rightarrow 9 - f(a)(4a) = 0 \rightarrow 9 - 4a^2 = 0 \rightarrow 4a^2 = 9 \rightarrow a = \pm \frac{3}{2}$

$a = \frac{1}{x} \rightarrow a = \pm \frac{1}{x} \rightarrow a = \frac{-1}{x}$

نقطه نشیب $a = \frac{1}{x} \rightarrow x^2 - 4x + 4 = (x-2)^2 = 0 \rightarrow x = 2$

1, 5

$y = \frac{x}{x^2 - 1} = 0 \rightarrow x = \pm 1$

x	-1	1
y'	$+$	$-$
y	\nearrow	\searrow

$\min_{x \in \mathbb{R}} |x^2 - 1| \rightarrow \min_{x \in \mathbb{R}} |x^2 - 1| = 0$

2

$y' = 2x^2 + 2ax - 2b = 0 \rightarrow x_1 = 0 \rightarrow -2b = 0 \rightarrow b = 0$

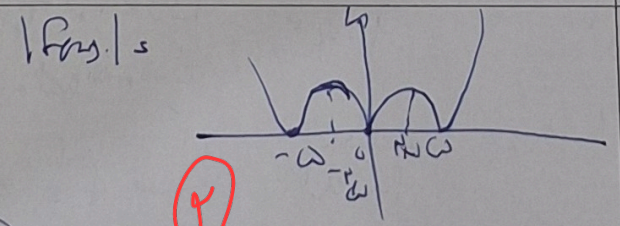
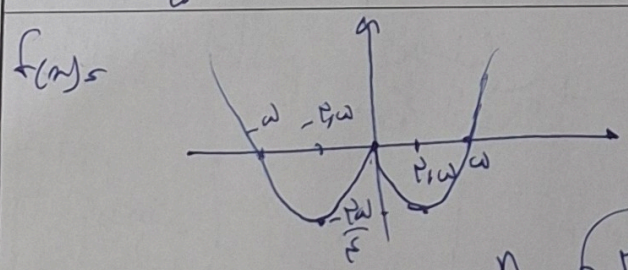
$x_2 = -a \rightarrow -2(-a) - 2b = 0 \rightarrow 2a - 2b = 0 \rightarrow a = b$

x	$-a$	0
y'	$+$	$-$
y	\nearrow	\searrow

$A \begin{vmatrix} -1 \\ 0 \end{vmatrix} \quad B \begin{vmatrix} a \\ -1 \end{vmatrix}$

$\sqrt{(a-0)^2 + (-0)^2} = \sqrt{a^2}$

2

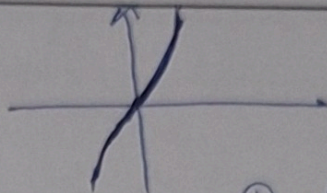


$\frac{n}{m} = \frac{m}{m}$

2

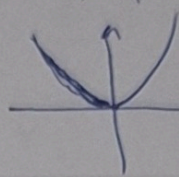
5

f_{xy} $\begin{cases} \rightarrow n \neq 0 & n^2 + 1 > 0 \\ \rightarrow n = 0 & -n^2 + 1 > 0 \end{cases}$



نکته: $n \neq 0$ ✓

$|f_{xy}|$ $\begin{cases} \rightarrow n \neq 0 & n^2 + 1 > 0 \text{ (1)} \\ \rightarrow n = 0 & -n^2 + 1 > 0 \text{ (2)} \end{cases}$



① $\rightarrow f'_{xy} \rightarrow$ method $n \neq 0$
 ② $\rightarrow f'_{xy} \rightarrow$ $n = 0$
 $n \neq 0 \rightarrow f'_{xy} = n^2 + 1$
 $n = 0 \rightarrow f'_{xy} = -n^2 + 1$

$[0, a] \rightarrow f_{xy} = (a-n)^n \sqrt{n} \rightarrow 0 \text{ و } 1 \rightarrow$ f'_{xy} $\begin{cases} \text{g max} \\ \text{g min} \end{cases}$

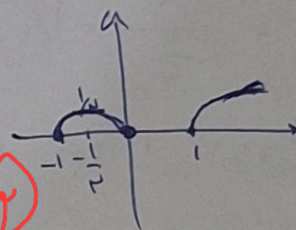
$f'_{xy} = \sqrt{n} + (a-n) \frac{1}{\sqrt{n}}$ \rightarrow constant \rightarrow $n = \frac{a}{2}$

$n \frac{1}{\omega} a \rightarrow \frac{1}{\omega} a \sqrt{\frac{1}{\omega}} \times a \frac{1}{\omega} = \frac{1}{\omega} \rightarrow \sqrt{\frac{1}{\omega}} \times a \frac{1}{\omega} = \frac{a}{\omega} = a \frac{1}{\omega} \div \frac{1}{\omega} = \frac{a}{\omega}$

f_{xy} $\begin{cases} \rightarrow n \neq 0 & \sqrt{n^2 - n} \\ \rightarrow n = 0 & \sqrt{-n^2 - n} \end{cases}$

تین کرانه نیت

$\leftarrow 1 + 1 \rightarrow$



$m \rightarrow 1$
 $n = 0$ $R = F$

$\frac{R_{m+n}}{R-n} = 1$ ✓

$ad - bc < 0 \rightarrow m^2 - m - 1 < 0 \rightarrow -1 < m < 1$

$m = 0 \text{ و } 1 \rightarrow$ تعذر ✓

$f_{xy} \rightarrow n \neq 0 \rightarrow \frac{n}{1-n^2} \rightarrow [0, +\infty) \rightarrow f'_{xy} = \frac{n^2 + 1}{1-n^2}$

$\rightarrow n = 0 \rightarrow \frac{n}{1+n^2}$

$f'_{xy} = \frac{n^2 + 1}{1+n^2}$

\rightarrow $\begin{vmatrix} 0 & 1 & 0 \\ 1 & 0 & 1 \\ 1 & 0 & 1 \end{vmatrix}$

$n \neq 0 \rightarrow f'_{xy} = \frac{1}{1}$
 $f'_{xy} = 1$

$\rightarrow n = 1 \rightarrow \frac{1+1}{1-1}$

نکته: $n = 1$