

دب ۲۰۰۰ دارد.

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

نقطه جاذبه

$n^2 - n + 1 = 0$ ←

$n^2 - n = 0$

$n=0$ / $n=1$ / $n=2$

نقطه جاذبه از سمت راست

نقطه ۲

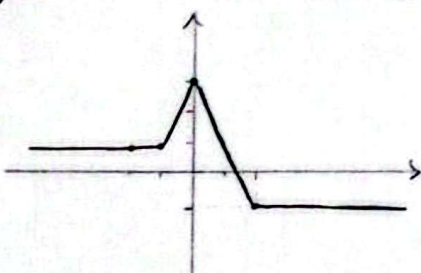
9

5

3

5

نمودار ریسمانی نسبی



	-1	0	1
$-m-1 - (-k_m) - m+r$	$m+1+k_m-m+r$	$m+1-k_m-m+r$	$m+1-k_m-m+r$
$\Rightarrow 1$	$\Rightarrow k_m+r$	$\Rightarrow -k_m+r$	$\Rightarrow -1$

بالاترین مقدار $\max$ برابر ۳ و مقدار $\min$ برابر -۱ می باشد

$\max + \min = 3 + (-1) = \boxed{2}$

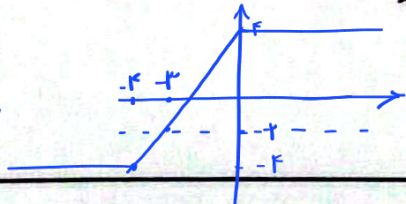
$$\left. \begin{aligned} y &= \left| \frac{1}{x} \right| - x \\ &\quad \downarrow \text{chain} \\ y' &= \left| \frac{1}{x} \right| + x - 1 \end{aligned} \right\}$$

$$\xrightarrow{\text{نقطة ٢}} \left| \frac{1}{r}n \right| - 1 = \left| \frac{1}{r}n + k \right| - 1 \Rightarrow \left| \frac{1}{r}n + k \right| = \left| \frac{1}{r}n \right| - 1$$

$$\frac{-1}{\frac{1}{x}n - k} = \frac{-1}{\frac{1}{x}n - 1} \quad \left| \frac{\frac{1}{x}n + k}{n - 2} = \frac{\frac{1}{x}n - 1}{x} \right| \quad \frac{\frac{1}{x}n + k}{x} = \frac{\frac{1}{x}n - 1}{x}$$

$$y' = \left| \frac{1}{r}u + r \right| - 1 = y$$

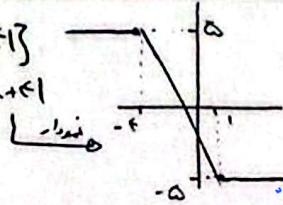
$$|u + r| - |u| = -r$$



$$2\ell = -\mu /$$

الف) $f(m) = [1 - 2m - (m+4)]$

$|1-m| - (m+4) = |m-1| - (m+4)$



$\Rightarrow \{ -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5 \}$

$R = [-5, 5]$

برای برد تابع باید از این بزرگتر
باشد - نقطه شروع

$\rightarrow f(m) = \frac{1}{m} - \left[\frac{m+1}{m} \right] = \frac{1}{m} - \left[1 + \frac{1}{m} \right] = \frac{1}{m} - \left[\frac{1}{m} \right] - 1$

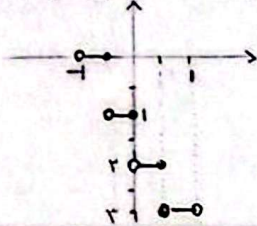
$\Rightarrow R_f = \{ -1, 0 \}$

1, 0

ب) $y = [-2m] - 1 \quad m \in (-1, 1)$

$-1 < m < 0 \rightarrow [-2m] = 1 \quad 0 < m < 1 \rightarrow [-2m] = -1$

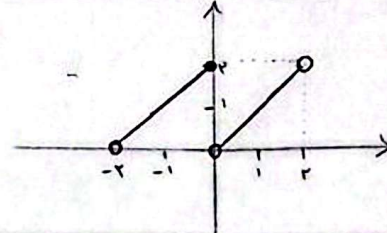
$0 < m < 1 \rightarrow [-2m] = 0 \quad 1 < m < 2 \rightarrow [-2m] = -2$



ب) $y = m - 2 \left[\frac{m}{2} \right] \quad m \in (-2, 2)$

$-2 < m < 0 \rightarrow \left[\frac{m}{2} \right] = -1 \rightarrow y = m + 2$

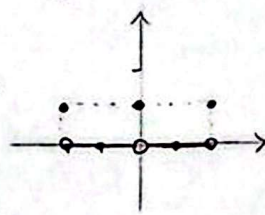
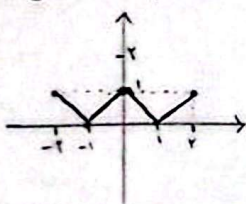
$0 < m < 2 \rightarrow \left[\frac{m}{2} \right] = 0 \rightarrow y = m$



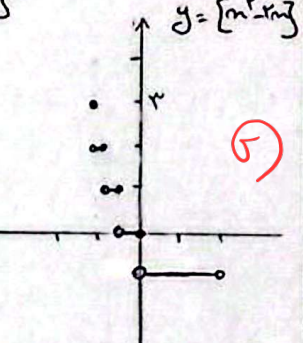
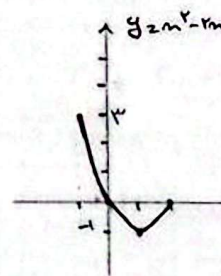
الف) $y = [|m| - 1] \quad m \in [-2, 2]$

$y = |m| - 1$

$y = [|m| - 1]$



$y = [m^2 - 2m] \quad m \in [-1, 2]$



$a + [b] = 4, 2 \rightarrow$ چون $[b]$ صحیح است پس a صحیح است

$b - [a] = 2, 4 \rightarrow$ چون $[a]$ صحیح است پس b صحیح است

$\Rightarrow \begin{cases} [a] + [b] = 4 \\ [b] - [a] = 2 \end{cases} \rightarrow 2[b] = 6 \rightarrow [b] = 3 \Rightarrow a + 3 = 4, 2 \rightarrow [a] = 1$

$b - [1] = 2, 4 \rightarrow [b] = 3, 4$

$\Rightarrow [a + b] = 1 + 3, 4 = 4, 4$

$(1 + \sqrt{2})^4 + \frac{(1 - \sqrt{2})^4}{(\sqrt{2} - 1)^4} = 191$

$0 < \sqrt{2} - 1 < 1 \rightarrow 0 < (\sqrt{2} - 1)^4 < 1 \Rightarrow (1 + \sqrt{2})^4 = 191 - (1 - \sqrt{2})^4$

$\Rightarrow 191 - 1 < (1 + \sqrt{2})^4 < 191 - 0 \rightarrow 190 < (1 + \sqrt{2})^4 < 191$

$\Rightarrow [(1 + \sqrt{2})^4] = 190$

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