

1) $n \rightarrow f(-n) - n f(n) = 2|n| + 1$

1A

2)

$$\begin{cases} -n \} f(n) + n f(-n) = 2|n| + 1 \end{cases}$$

$$\rightarrow f(n) - n f(-n) + n^2 f(n) = 2n|n| + -n$$

$$(1+n^2) f(n) = -2n|n| - n + 2|n| + 1$$

$$f(n) = \begin{cases} n > 0: \frac{-2n^2 + n + 1}{n^2 + 1} \\ n < 0: \frac{2n^2 - n + 1}{n^2 + 1} \end{cases}$$

$$f(0) \rightarrow 2 f(0) = 1 \rightarrow f(0) = \frac{1}{2}$$

$$f(n^2) \rightarrow f(n^2) + 3 = n^2 - 2n^2 + 1 \rightarrow f(n^2) = n^2 - 2n^2 + 3$$

$$ny - y = n^2 + n + 1 \Rightarrow n^2 - ny + n + 1 + y = 0$$

$$n^2 + n(1-y) + 1+y = 0 \quad n = \frac{-(1-y) \pm \sqrt{(1-y)^2 - 4(1+y)}}{2}$$

$$y^2 - 2y + 1 - 1 - 1 = y^2 - 2y - 1 \geq 0$$

$$R_f = R - (-1, 1) \quad R_f = (-\infty, -1] \cup [1, +\infty)$$

الف	ب	ج	د
$a > 0$ $\frac{a}{b} = n_{min}$ $y_{min} = \frac{2 \times 10}{14} = \frac{20}{14}$ $\Rightarrow \frac{20}{14} - \frac{1}{14} + \frac{11}{14} = \frac{20}{14}$ $R_f = [-\frac{20}{14}, +\infty)$	$n_{max} = 3$ $y_{max} = 2$ $R_f = [1, 2]$	$R_f = [1, +\infty)$	$y(-\infty, +\infty)$ $y(0, \infty)$ $\Rightarrow R = R$

$$u = -\frac{-y-1}{y-2} \left\{ \sqrt{m^2+1} + \frac{1}{\sqrt{m^2+1}} \right\}$$

$$R_L = R = \left\{ \frac{3}{2} \right\}$$

$$R_R = \left\{ \frac{1}{2}, \infty \right\}$$

$$u^2 + \frac{1}{u^2+1} - 2$$

$$f + \frac{1}{f} - 2 = 0$$

$$R_f = \left\{ \frac{1}{2}, \infty \right\}$$

$$u^2 = \frac{y-2}{y+1}$$

$$R_f = (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$$

از تقبض و به بار دیده این
 روشن او بخوبی
 چگونه ریشه
 برد نباید متفاوت
 در یاد !!

$$ym^2 - y = 3m^2 + 4 \rightarrow (3-y)m^2 + (4+y) = 0$$

$$2(3-y) = 0 \rightarrow y \neq 3$$

$$-4(3-y) \left[\frac{4+y}{3-y} \right] + \frac{-4y}{3-y} +$$

$$R_f = (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$$

برای استفاده از روش دلتا ضریب m
 نباید صفر شود! البته اصلاً احتیاج به استفاده از
 این روش هم نبود

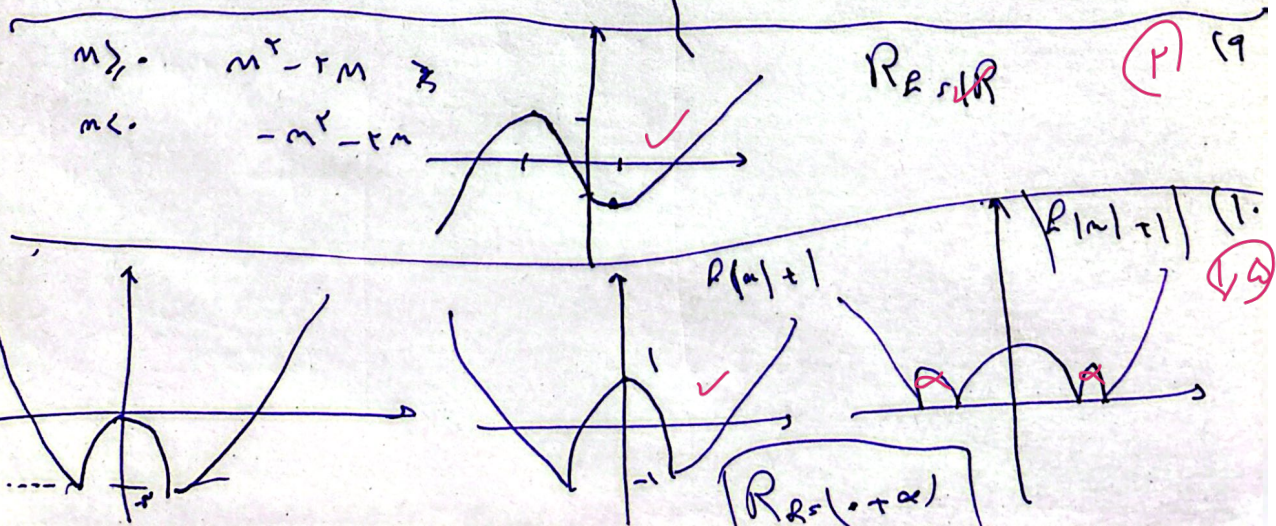
$$\sin \theta \rightarrow -\frac{1}{2}$$

$$\sin \theta \rightarrow -\frac{1}{2}$$

$$R_f = [-\frac{3}{2}, \frac{1}{2}]$$

$$\sqrt{\frac{9(m-2)}{4(m-2)}} = \left[\frac{3}{2} \right]$$

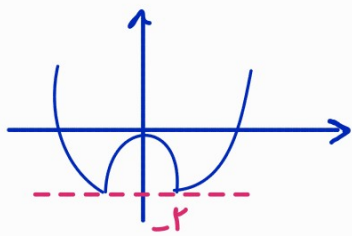
$$R_f = \left[\frac{3}{2}, \infty \right)$$



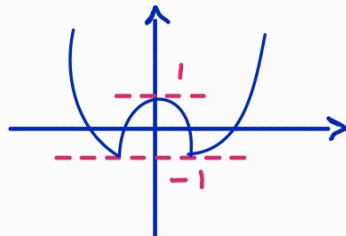
روش اول: $y x^2 - y = 3x^2 + 4 \rightarrow (y-3)x^2 = y+4$ -9

$$x^2 = \frac{y+4}{y-3} \geq 0 \rightarrow \frac{-4}{+4} \frac{3}{-1} \Rightarrow R_y = (-\infty, -4] \cup (3, +\infty)$$

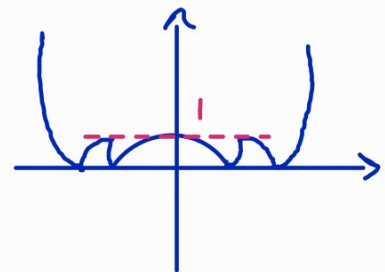
روش دوم: $\square = x^2 \rightarrow \begin{cases} x^2 = 0 \rightarrow y = -4 \\ x^2 \sim \infty \rightarrow y = 3 \end{cases} \xrightarrow[\text{محدوده}]{\text{محدوده میوه}} R_y = (-\infty, -4] \cup (3, +\infty)$



$$y = f(1-x)$$



$$y = f(|x|) + 1$$



$$y = |f(|x|) + 1|$$

-10