

(۲)

(۱)

$$f(m) = ? \rightarrow f(-m) - mf(m) = \nu|m| + 1$$

$$\rightarrow m = m \rightarrow f(-m) - mf(m) = \nu|m| + 1$$

$$\rightarrow m = -m \rightarrow f(m) + mf(-m) = \nu|m| + 1$$

$$\rightarrow \begin{cases} -mf(-m) + mf(m) = -\nu|m| + 1 \\ f(m) + mf(-m) = \nu|m| + 1 \end{cases} \rightarrow \begin{cases} mf(m) + f(m) = \nu|m| + 1 - \nu|m| + 1 \\ f(m) + mf(-m) = \nu|m| + 1 \end{cases}$$

$$\rightarrow f(m) = \frac{\nu|m| + 1 - \nu|m| + 1 - mf(m)}{m^2 + 1} \rightarrow f(m) = \frac{(1-m)(\nu|m| + 1)}{m^2 + 1}$$

$$f(m) + f(0) = m^2 - cm + 4 \rightarrow m = 0 \rightarrow f(0) = 4 \rightarrow f(0) = \nu$$

$$\rightarrow f(m) = m^2 - cm + 4 \rightarrow f(m^2) = m^2 - cm^2 + \nu$$

$$y = \frac{m^2 - cm + 4}{m - 1} \rightarrow ym - y = m^2 - cm + 4 \rightarrow m^2 - ym + m + c + y = 0$$

$$\rightarrow m^2 + ((1-y)/m + c)y = 0 \rightarrow a = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \rightarrow a = \frac{y-1 \pm \sqrt{(1-y)^2 - 4c(y+1)}}{2}$$

$$\rightarrow (1-y)^2 - 4c(y+1) \geq 0 \rightarrow y^2 - 4y - \nu \geq 0 \rightarrow R_F = (-\infty, -1] \cup [\nu + \infty)$$

$\Delta \geq 0$

$$\text{الف) } y = m^2 - 2m + 1 \rightarrow m = -\frac{b}{2a} \rightarrow a = \frac{d}{f} \quad y = -\frac{1}{\lambda}$$

$$\rightarrow R_F = [-\frac{1}{\lambda}, +\infty)$$

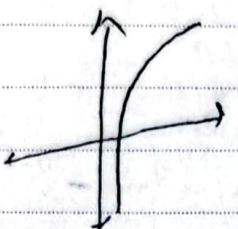
$$\text{ب) } y = \sqrt{-m^2 - 4m - 3} \rightarrow a = -\frac{b}{2a} \rightarrow a = 0 \rightarrow y = 0 \rightarrow R = (-\infty, 0]$$

$$\rightarrow R_F = [R \rightarrow [0, \infty)]$$

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٩) $y = \sqrt{u^2 - \varepsilon u^2 + \varepsilon u + 1} \rightarrow$ ادامی نشتالده با قدم باند به بیشترین فربه فراتر است
بنابر این داریم

$\rightarrow R = IR \rightarrow R_F = \sqrt{R} \rightarrow [0, +\infty) = R_F$

١) $y = \sqrt{u^2 - \varepsilon u^2 + \varepsilon u + 1}$  $\rightarrow R_F = (-\infty, +\infty)$

١٠) $y = \frac{u^2 + 1}{u - \varepsilon} \rightarrow (y u - \varepsilon y = u^2 + 1) \rightarrow (y u - u^2 = 1 + \varepsilon y)$ (٢) (٢)

$\rightarrow u(y - \varepsilon) = 1 + \varepsilon y \rightarrow u = \frac{1 + \varepsilon y}{y - \varepsilon} \rightarrow R_F = [\frac{1}{\varepsilon}, +\infty)$

ب) $y = \sqrt{\frac{\varepsilon u + 1}{u - \varepsilon}} \rightarrow y^2 \geq 0 \rightarrow y^2 = \frac{\varepsilon u + 1}{u - \varepsilon} \rightarrow y^2 u - \varepsilon y^2 = \varepsilon u + 1$

$\rightarrow y^2 u - \varepsilon u = 1 + \varepsilon y^2 \rightarrow u(y^2 - \varepsilon) = 1 + \varepsilon y^2 \rightarrow u = \frac{1 + \varepsilon y^2}{y^2 - \varepsilon}$

$\rightarrow R_F = [0, 1) \cup (1, +\infty)$

٩) $y = \frac{u^2 + \varepsilon}{\sqrt{u^2 + \varepsilon}} \rightarrow \frac{u^2 + \varepsilon + 1}{\sqrt{u^2 + \varepsilon}} \rightarrow \sqrt{u^2 + \varepsilon} + \frac{1}{\sqrt{u^2 + \varepsilon}} \rightarrow u \geq 0$

$\rightarrow y = \frac{\varepsilon}{\sqrt{\varepsilon}} \rightarrow R_F = [\frac{\varepsilon}{\sqrt{\varepsilon}}, +\infty)$

١) $y = u^2 + \frac{1}{u^2 + \varepsilon} \rightarrow u^2 + \varepsilon + \frac{1}{u^2 + \varepsilon} - \varepsilon \rightarrow u^2 \geq 0 \rightarrow y = \frac{1}{\varepsilon}$

$\rightarrow R_F = [\frac{1}{\varepsilon}, +\infty)$

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

$$\rightarrow a = -b \pm \sqrt{b^2 - 4ac} \rightarrow m = \frac{-(-y+\varepsilon) \pm \sqrt{(-y+\varepsilon)^2 - 4(y-1)(-y-\varepsilon)}}{2(y-1)} \rightarrow R_F = 1R - [0, 0]$$

$$y = \frac{m^2 + \varepsilon}{m^2 - 1} \rightarrow m^2 = \infty \rightarrow \frac{1}{m} = 0 \rightarrow y = -\varepsilon$$

$$\rightarrow R_F = 1R - [-\varepsilon, \varepsilon]$$

فقط مقدری که به بی نهایت
پایه تقیازه نیست!برای استفاده از روش دلتا ضریب
نباید صفر شود! (استهلا اجتناب به استفاده از
این روش هم نبود)

صفحه آخر

$$f(m) = \frac{m \sin m + \varepsilon}{\sin m - 1} \rightarrow \sin m = 1 \rightarrow y = -\frac{1}{2}$$

$$[-\frac{1}{2}, -\frac{1}{2}]$$

$$\sin m = 0 \rightarrow y = -\frac{\varepsilon}{2} \quad \sin m = 1 \rightarrow y = -\frac{1}{2} \rightarrow R_F = [-\frac{\varepsilon}{2}, -\frac{1}{2}]$$

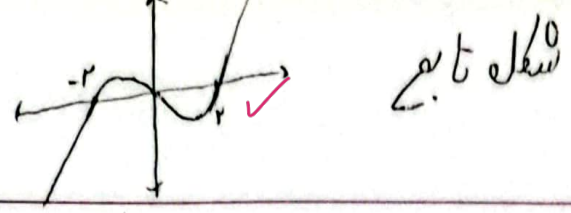
فقط سر و ته ربع!

$$y = \left| \frac{m-1}{\varepsilon m} \right| \rightarrow f(m) = \frac{m-1}{\varepsilon m}$$

$$\rightarrow f(m) = \left| \frac{m-1}{\varepsilon m} \right| \rightarrow y = \frac{1}{\varepsilon}$$

$$\rightarrow R_F = (0, 1 + \infty)$$

$$b) y = \left| \frac{9m-1}{-m+\varepsilon m} \right| \rightarrow \frac{9(m-1)}{\varepsilon(m-1)} \rightarrow \left| \frac{9}{\varepsilon} \right| \rightarrow \frac{9}{\varepsilon} \rightarrow R_F = [\frac{9}{\varepsilon}]$$

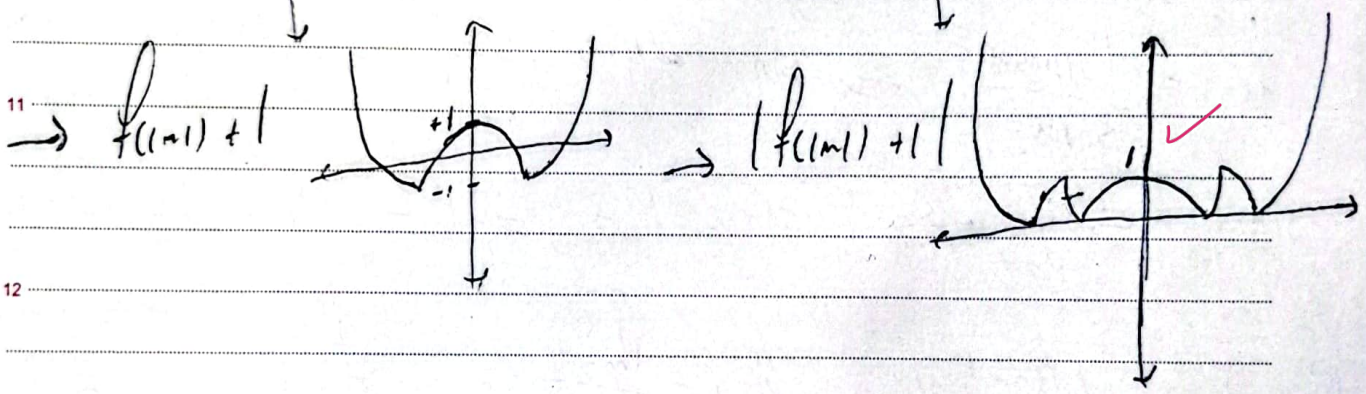
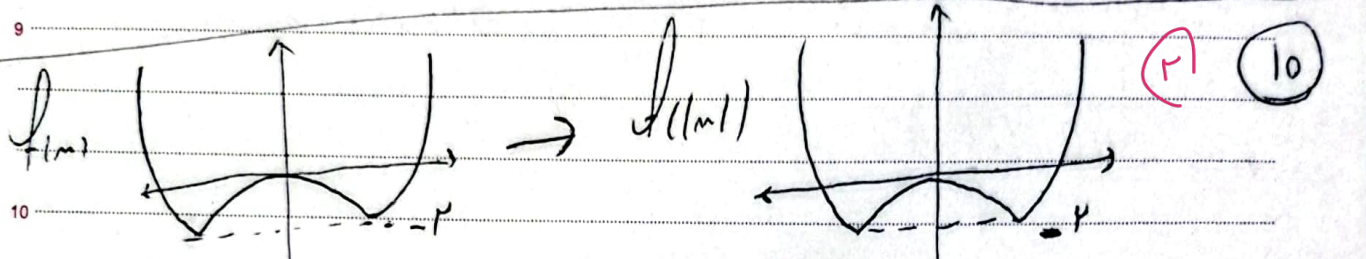
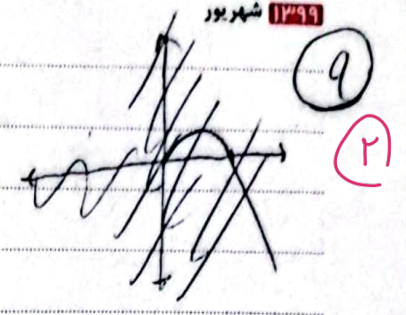


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① $y = a|m| - km \rightarrow |m| \leq 0 \rightarrow a = 0$

8 $\frac{-m^2 - km}{-m^2 - km} \rightarrow R_f = 1$ ✓



روش اولی: $y n^r - y = 3n^r + 4 \rightarrow (y-3)n^r = y+4$ -4

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

روش دوم: $\square = n^r \rightarrow \begin{cases} n^r = 0 \rightarrow y = -4 \\ n^r \sim \infty \rightarrow y = 3 \end{cases} \xrightarrow[\text{مفردش}]{\text{مخرج میبونه}} R_y = (-\infty, -4] \cup (3, +\infty)$

$\square = \sin n \rightarrow \begin{cases} \sin n = -1 \rightarrow y = -\frac{1}{r} \\ \sin n = 1 \rightarrow y = -3 \end{cases} \xrightarrow[\text{مفردش}]{\text{مخرج میبونه}} R_y = [-3, -\frac{1}{r}]$ -5