

۱۹, ۱۸

نهر ابرصانی / کلنگ ۴ / طرز هم دفتر

$$\ominus \begin{cases} x \rightarrow x f(-x) - x^2 f(x) = \cancel{1} + x \leftarrow x x \\ -x \rightarrow f(x) + x f(-x) = 1/x + 1 \end{cases}$$

۱- m رو غیبی ببری تو
قد مطلق!

$$(-x^2 - 1) f(x) = 1/x^2 - x - 1$$

$$f(x) = \frac{1/x^2 - x - 1}{-x^2 - 1}$$

علامت m معلوم نیست!

صفتی آفر...

$$x=0 \rightarrow 1 f(0) = 1 \rightarrow f(0) = 1$$

$$x=x^2 \rightarrow f(x^2) + 1 = x^2 - 1/x^2 + 1 \rightarrow f(x^2) = x^2 - \frac{1}{x^2} + 1$$

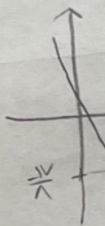
$$x^2 + (1-y)x + y + 1 = 0$$

$$y x - y = x^2 + x + 1$$

$$\Delta \rightarrow \frac{y-1 \pm \sqrt{y^2+1-y} - y - 1}{2} \rightarrow y^2 - 4y - 1 \geq 0$$

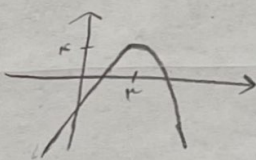
$$(y-2)(y+1) \geq 0 \rightarrow \frac{-1}{2} \leq y \leq 2 \rightarrow R_f = (-\infty, -1] \cup [2, +\infty)$$

الف)



$$R_f = [-\frac{1}{x}, +\infty)$$

ب)



$$R_f = \sqrt{(-\infty, 1]} = [0, 1]$$

$$ج) \sqrt{R} = [0, +\infty) = R_f$$

$$د) R_f = \mathbb{R}$$

$$الف) x_{n+1} = 2xy - 4y \rightarrow (2-4y)x = -4y-1 - x = \frac{-4y-1}{2-4y} \rightarrow R_f = R \cup \frac{1}{2}$$

$$ب) \sqrt{R} = [1, \infty) \rightarrow R_f = [0, +\infty) \cup \frac{1}{2}$$

$$ج) \sqrt{x^2 + 1} = a \rightarrow a + \frac{1}{a} \geq 2 \rightarrow R_f = [\frac{\sqrt{13}}{2}, +\infty)$$

$$د) x^2 + \frac{1}{x^2+1} + 1 - 1 \rightarrow a + \frac{1}{a} - 1 \rightarrow R_f = [1, +\infty)$$

$$\hookrightarrow 1 + \frac{1}{1} = \frac{1}{1} - \frac{1}{1} = \frac{1}{1}$$

موسسه مالی و اعتباری ثامن الحجج (ع)



تاریخ:

شماره:

پیوست:

(تحت نظارت بانک مرکزی)

این چه شده؟

$$x^2 - 3x + 2 = 0 \rightarrow x = 1, 2$$

$$x^2 - 3x + 2 = 0 \rightarrow x = 1, 2$$

$$x^2 - 3x + 2 = 0 \rightarrow x = 1, 2$$

(1)

صفتی بعد با دقت محلول!

$$y^2 - 3y + 2 = 0 \rightarrow y = 1, 2$$

$$y^2 - 3y + 2 = 0 \rightarrow y = 1, 2$$

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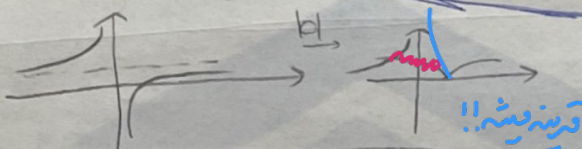
$$\sin \theta = 1 \rightarrow y = -3$$

$$\sin \theta = -1 \rightarrow y = -\frac{1}{3}$$

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

(2) - 1

الف)



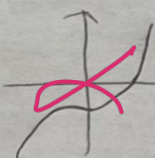
$$R_f = [0, +\infty)$$

(1, 5)

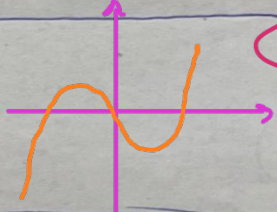
ب)

$$\frac{9(x-2)}{12(x-2)} = R_f = \left\{ \frac{3}{4} \right\}$$

$$-x^2 - 2x + 1 = 0$$



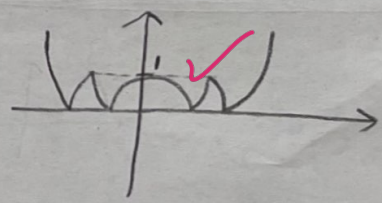
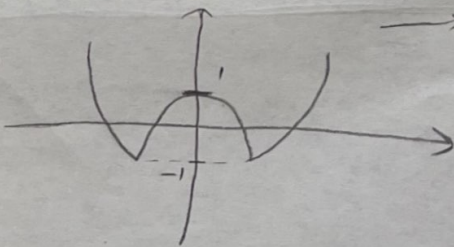
$$R_f = \mathbb{R}$$



(1, 5)

$$f(1/n) + 1$$

$$y = |f(1/n) + 1|$$



(2)

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

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

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

۱- جای n ، $-n$ قرار می دهیم و یک دستگاه می سازیم:

$$\begin{aligned} f(-n) - n f(n) &= 2|n| + 1 \xrightarrow{\times n} \begin{cases} n f(-n) - n^2 f(n) = 2n|n| + n & (I) \\ f(n) + n f(-n) = 2|n| + 1 & (II) \end{cases} \\ f(n) + n f(-n) &= 2|n| + 1 \end{aligned}$$

$$\underline{II - I} \rightarrow (1 + n^2) f(n) = 2(1-n)|n| + 1 - n \Rightarrow f(n) = \frac{(1-n)(2|n|+1)}{1+n^2}$$