

19, VA

Subject : (

) حساب التفاضل والتكامل

Date :

$$f(-n) - n f(n) = \frac{1}{n} \quad \text{---} \quad n f(-n) - n^2 f(n) = \frac{1}{n} + \frac{1}{n^2} \quad (1)$$

$$f(n) + n f(-n) = \frac{1}{n} + 1 \quad \text{---} \quad n f(-n) + f(n) = \frac{1}{n} + 1 \quad (2)$$

$$f(n) = \frac{\frac{1}{n} + 1 - \frac{1}{n}}{-n^2 - 1} \quad \text{---} \quad (-n^2 - 1) f(n) = \frac{1}{n} + 1 - \frac{1}{n} - 1$$

صفحة آفد...

$$f(n) + f(0) = n^2 - n + 4 \quad f(0) + f(0) = 4 \rightarrow f(0) = 2 \quad (3)$$

$$\Rightarrow f(n) = n^2 - n + 2 \rightarrow f(n^2) = n^4 - n^2 + 2$$

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

$$n = \frac{y-1 \pm \sqrt{y^2 - 4y + 1 - 4y - 4}}{2} \rightarrow y^2 - 4y - 3 \geq 0 \rightarrow (y-7)(y+1) \geq 0$$

$$\frac{-1}{+} \quad \frac{7}{-} \quad \Rightarrow R_f = (-\infty, -1] \cup [7, +\infty)$$

$$(الف) y = n^2 - 2n + 1 \quad \min \left| \frac{dy}{dn} \right| \quad \Rightarrow R = \left[-\frac{1}{\lambda}, +\infty \right) \quad (5)$$

$$\left| \frac{2n-2}{1} - \frac{2}{\lambda} + 1 \right| = \frac{1}{\lambda}$$

$$(ب) y = \sqrt{-n^2 + 4n - 3} \quad \max \left| \frac{dy}{dn} \right| = \frac{2}{\sqrt{-n^2 + 4n - 3}} = 2 \quad \Rightarrow R = [0, 2] \quad (6)$$

$$-n^2 + 4n - 3 = 0 \rightarrow -1 + 4 - 3 = 0$$

$$(ج) y = \sqrt{n^2 - 2n + 1} \quad \Rightarrow R = [0, +\infty) \quad (7)$$

Arman

$$1) y = \log(n^p + V_n + c) \rightarrow R = \mathbb{R}$$

$$\text{الف) } y = \frac{n^{p+1}}{n-p} \rightarrow R = \mathbb{R} - \left\{ \frac{1}{p} \right\}$$

(2) - 5

$$\text{ب) } y = \sqrt{\frac{n+1}{n-p}} \rightarrow R = [0, +\infty) - \left\{ \frac{1}{p} \right\}$$

$$2) y = \frac{n^p + c}{\sqrt{n^p + p}} = \sqrt{n^p + p} + \frac{1}{\sqrt{n^p + p}} \rightarrow R = \left[\frac{c\sqrt{p}}{p}, +\infty \right)$$

$$1) y = n^p + c + \frac{1}{n^p + c} - c \Rightarrow R = \left[\frac{1}{p}, +\infty \right)$$

$$y = \frac{n^p + c}{n^p - 1} \begin{cases} n=0 \rightarrow y = -c \\ n \rightarrow \infty \rightarrow y = 1 \end{cases} \quad \text{روشن اصله؟} \quad R = (-\infty, -c] \cup (1, +\infty) \quad (1)$$

$$y = \frac{p \sin n + c}{\sin n - p} \begin{cases} \sin n = 1 \rightarrow -p \\ \sin n = -1 \rightarrow -\frac{1}{p} \end{cases} \Rightarrow R_f = \left[-\frac{1}{p}, \frac{1}{p} \right] \quad (2)$$

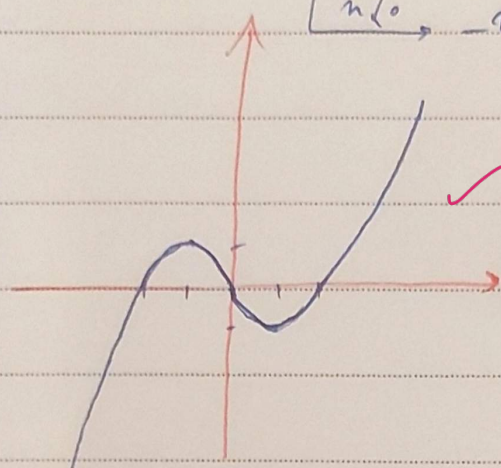
$$\text{الف) } y = \left| \frac{n^{p+1}}{n} \right| \rightarrow R = [0, +\infty) - \left\{ \frac{1}{p} \right\} \quad (1) - 1$$

$$\text{ب) } y = \sqrt{\frac{q_n - 1}{r_n - 1}} = \sqrt{\frac{q(n-p)}{r(n-p)}} = \frac{p}{r} \rightarrow R = \left\{ \frac{p}{r} \right\}$$

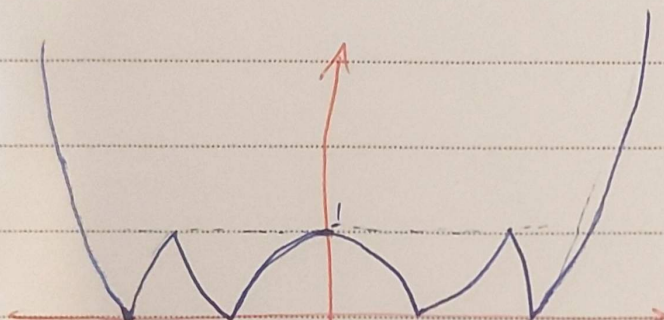
— Arman —

$$y = n/n - P_m \quad \begin{matrix} n < 0 \\ n > 0 \end{matrix} \quad \begin{matrix} n^2 - P_m = n(n-r) \\ -n^2 - P_m = -n(n+r) \end{matrix}$$

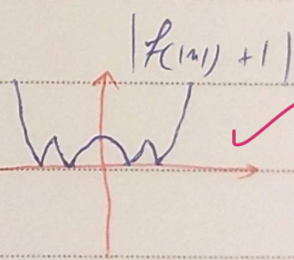
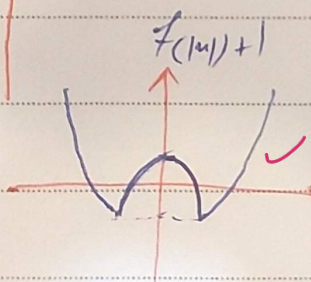
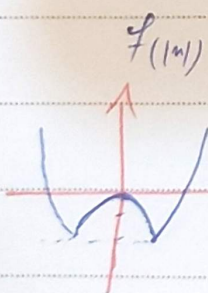
(2) 9



$$\Rightarrow R_f \checkmark = \mathbb{R}$$



(2) 10



2/2/2

۱- جای n و $-n$ قرار می دهیم و یک دستگاه معادلات می یابیم:

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

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

۹- روش اصلی: $yn^2 - y = 3n^2 + 4 \rightarrow (y - 3)n^2 = y + 4$

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

۸- اول برد عبارت داخل قدر مطلق

رو حساب می کنیم بعد قدر مطلق می گیریم

فقط حواست باشد که $y = \frac{3}{4}$ هم هست داخل برد

$y = -\frac{3}{4}$ عضو برد عبارت داخل قدر مطلق هست و وقتی قدر مطلق بگیریم $y = \frac{3}{4}$

روید به نمودار:

