

نام : دینا احمدی

۱۴ : سید علی اکبر

تسلیع : دراز، دهم، دضرب B

۲۰ آفرین!

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Q

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(۳)

Q

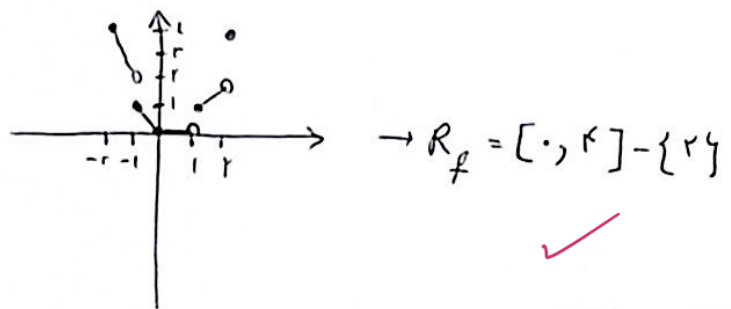
⑦

Q

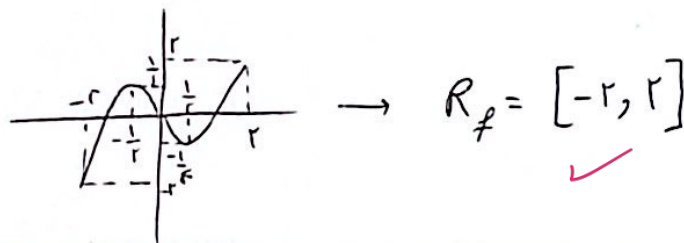
④

⑤

الف) $y = \begin{cases} -r & \text{if } x = -1 \rightarrow y = -r \\ -1 & \text{if } x = 0 \rightarrow y = -1 \\ 0 & \text{if } x = 1 \rightarrow y = 0 \\ 1 & \text{if } x = r \rightarrow y = 1 \\ r & \text{if } x = r \rightarrow y = r \end{cases}$



ب) $\frac{-x^r - x}{x^r - x}$



$y = \frac{(n+1) + x + 1}{x^r + x} = \frac{r(n+1)}{x^r + x} = \frac{r(n+1)}{x(x+1)} \stackrel{x \neq -1}{=} \frac{r}{x} \stackrel{x=-1}{\rightarrow} y = \frac{r}{-1} = -r$

$\rightarrow R_f = \mathbb{R} - \{0, -r\}$

$R_f = \mathbb{R} - \{a, b\} \rightarrow \begin{matrix} a=0 \\ b=-r \end{matrix} \rightarrow a+b = -r$

$y=0 \rightarrow 0 \cdot 0 \rightarrow \frac{r}{x} = 0 \rightarrow x = \infty$

$\sqrt{x} = t \rightarrow y = \frac{t^r - rt + r}{t^r - rt + 1} = \frac{(t-1)(t-r)}{(t-1)^r} \rightarrow y = \frac{t-r}{t-1} \rightarrow t = \frac{y-r}{y-1}$

$\rightarrow \sqrt{x} = \frac{y-r}{y-1} \rightarrow \frac{y-r}{y-1} \geq 0 \rightarrow \frac{1}{y-1} \geq 0 \rightarrow R = (-\infty, 1) \cup [r, \infty)$

$f(n) = \frac{x^r + r - x - r}{x^r - 1} = \frac{(n+r)(n+1)(n-1)}{(n-1)(n+1)} = n+r \quad (n \neq \pm 1)$

$D_f = \mathbb{R} - \{\pm 1\} \xrightarrow{n=1} f(1) = r \xrightarrow{n=-1} f(-1) = 1 \rightarrow R_f = \mathbb{R} - \{1, r\} \rightarrow 1+r = r$