زهرا آقایی

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یازدهم ریاضی C

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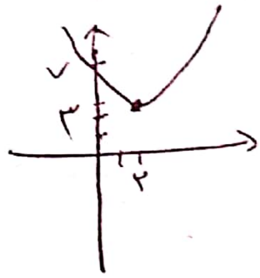

الف) $x^2-4x+7 \to \Delta<0 \to ext\begin{cases} -\frac{b}{2a}=2 \\ 3 \end{cases}$

x	0	2
y	7	3

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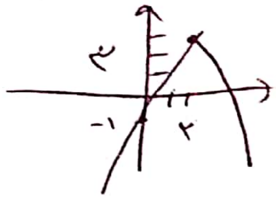
ب) $y=-x^2+4x-1$ $\quad ext\begin{cases} 2 \\ 3 \end{cases}$

x	0	2
y	-1	3



(۲

$P=m$ مقدار

$2x^2+(m+1)x+\frac{1}{2}m+2$

الف) $\Delta>0 \to (m+1)^2-(4\times(\frac{1}{2}m+2)\times 2)>0$

$m^2+1+2m-4m-16>0$

$m^2-2m-15>0 \to (m-5)(m+3)>0$ $\quad$ $\begin{array}{c} -3 \quad 5 \\ \hline + \; | \; - \; | \; + \end{array}$

$m\in(-\infty,-3)\cup(5,+\infty)$

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ب) $\Delta=0 \quad m^2-2m-15=0 \begin{cases} \to m=5 \\ \to m=-3 \end{cases}$

پ) $\Delta<0 \quad m^2-2m-15<0 \quad (m-5)(m+3)<0$ $\quad$ $\begin{array}{c} -3 \quad 5 \\ \hline + \; | \; - \; | \; + \end{array}$

$m\in(-3,5)$

ت) $\Delta\geq 0 \quad (m-5)(m+3)\geq 0$ $\quad$ $\begin{array}{c} -3 \quad 5 \\ \hline + \; | \; - \; | \; + \end{array}$ $\quad m\in(-\infty,-3]\cup[5,\infty)$

(۳

$y=(m-2)x^2-2(m+1)x+10$

الف)

$\Delta>0 \quad 4m^2-32m+184>0$

$S<0 \quad \frac{2m+2}{m-2}<0$ $\quad$ $\begin{array}{c} -1 \quad 2 \\ \hline + \; | \; - \; | \; + \end{array}$ $\quad (-1,2)$

$P>0 \quad \frac{10}{m-2}>0$ $\quad$ $\begin{array}{c} 2 \\ \hline - \; | \; + \end{array}$ $\quad (2,+\infty)$

$\cap \; \varnothing$

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ادامه ۳)

ب) $\Delta > 0 \to \checkmark$ همواره

$S < 0 \quad \frac{10}{m-2} < 0 \quad \frac{2}{-\;|\;+} \quad (-\infty, 2)$

$P < 0 \quad \frac{2m+2}{m-2} < 0 \quad \frac{-1 \quad 2}{+\;|\;-\;|\;+} \to (-1, 2)$

$\cap \to (-1, 2)$

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۴)

$y = (m-2)x^2 - 2(m+1)x + 10$

الف) $\max \begin{cases} \Delta > 0 & \checkmark \\ m-2 < 0 & m < 2 \\ P < 0 & \frac{10}{m-2} < 0 \quad \frac{2}{-\;|\;+} \quad (-\infty, 2) \end{cases} \cap (-\infty, 2)$

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$\min \begin{cases} m-2 > 0 & m > 2 \\ \Delta > 0 & \\ P < 0 & \frac{10}{m-2} < 0 \quad \frac{2}{-\;|\;+} \to (-\infty, 2) \end{cases} \Rightarrow \cap \quad \emptyset$

اجتماع

$\min \cup \max \to (-\infty, 2)$

ب) $\frac{-b}{2a} = -2 \quad \frac{2m+2}{2m-4} = -2 \to 2m+2 = -4m+8 \to \boxed{m=1}$

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۵)

$\frac{2x^2}{3} - (2\sin\alpha)x + \frac{3}{2} = 0 \qquad \Delta \geq 0 \to 4\sin^2\alpha - 4 \times \frac{2}{3} \times \frac{3}{2} \geq 0$

$\sin^2\alpha \geq 1 \to \sin^2\alpha = 1 \to \sin\alpha = \pm 1$

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$-1: \quad \frac{2}{3}x^2 + 2x + \frac{3}{2} = 0 \to x = \frac{-12}{8}$

$1: \quad \frac{2}{3}x^2 - 2x + \frac{3}{2} = 0 \to 4x^2 - 12x + 9 = 0$

$x^2 - 12x + 36 = 0$

$(x-6)(x-6) \to \boxed{x = \frac{3}{2}}$

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(۶)

$$\frac{(x^2-2x-1)(x^2-4x-5)}{1-x^2} \to \frac{x^4-6x^3+11x^2-6x+2}{(x-1)(x+1)}$$

$x \neq \pm 1$

$$\begin{array}{r|l} x^4-6x^3+11x^2-6x+2 & x^2-1 \\ \hline -x^4+x^2 & x^2-6x+11 \\ \hline -6x^3+12x^2-6x+2 & \\ +6x^3-6x & \\ \hline 12x^2-12x+2 & \\ -12x^2+12 & \\ \hline -12x-10 & \end{array}$$

$y = x^2-6x+11 + \frac{-12x-10}{x^2-1}$ (۵)

$y = 2x^2+3x+5 \to x = \frac{-b}{2a} = \frac{-3}{4}$ $\quad y = \frac{87}{8}$

(۷)

$3x^2-(m+2)x-2=0$ $\quad P=\frac{-1}{3}$ $\quad S=\frac{m+2}{3}$

$3(\alpha+\beta)=5(\alpha\beta)+7 \to \frac{m+2}{3} = \frac{-1}{3}+7$

$\frac{m+2}{3}$ $\quad \frac{m}{-2}$

$\hookrightarrow \frac{m+21}{3} = 7$ (۵)

$m+21=21 \leftarrow m=3$

$4x^2-6x-2=0$ $\quad \hookrightarrow 2x^2-3x-1=0$

$\hookrightarrow \alpha^2+\beta^2 \to S^2-2P \to \frac{9}{4}+\frac{5}{2} \to \frac{19}{4}$

(۱)

$x^2-5x+2=0$ $\quad \frac{\alpha^3}{\beta^2}+\frac{\beta^3}{\alpha^2}=?$

$\alpha\beta=2 \to \beta=\frac{2}{\alpha}$ $\quad \alpha+\beta=5$ $\to \frac{\alpha^4}{8} + \frac{\frac{16}{\alpha^4}}{\frac{4}{\alpha^2}} = \frac{\alpha^4}{8} + \frac{4}{\alpha^2} \to \frac{\alpha^4+\beta^4}{8} = \frac{(\alpha^2+\beta^2)^2-2\alpha^2\beta^2}{8}$

$= \frac{(S^2-2P)^2-2P^2}{8} = \frac{(25-4)^2-2\times 4}{8} = \frac{441-8}{8} = \frac{433}{8}$

(۵) (۱۹)

(۹)

$y_1 = ax^2+bx+c$ $\quad y_2 = 2x+10$

$y_2 = 2\times 2+10 = 14$

$y_1 = 4a+2b+c \to 14 = 4a+2b+c$

$10 = 2(2a+b) \to 2a+b=5$ (۱)

$y_1 = 9a-3b+c$ $\quad y_2 = -3a+10 = 4$ $\to 9a-3b=-6$

(۱)، (۲) $\to$ $\begin{cases} 2a+b=5 \\ 3a-b=2 \end{cases}$ $\quad \leftarrow 3(3a-b)=6$ (۲) $\quad 3a-b=2$

$5a=10 \to a=2$ $\quad b=1$

$y = ax^2+3x+c \to x = \frac{-b}{2a} = \frac{-3}{4}$

(۱۰)

$y = 2x^2 + (m+1)x + m + 4 \rightarrow 2x^2 + (m+1)x + m + 4 = x$ ($x = y$)

$2x^2 + (m)x + m + 4 = 0 \rightarrow a > 0 \quad \Delta < 0 \rightarrow m^2 - 8m - 48 < 0$

$(m+6)(m-12)$

$-6 \quad 12$

i) $m = 12 \quad y = 2x^2 + 12x + 12 \rightarrow \Delta > 0$

ii) $m = -6 \rightarrow y = 2x^2 - 4x + 4 \quad \Delta < 0 \rightarrow$ **$m = -5$** ← جواب

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