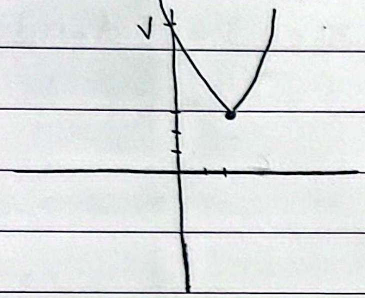
تکلیف شماره ۱۲ — دنیا جمشیدی — یازدهم تجربی

① الف) $y = x^2 - 4x + 7$

$\Delta < 0$ → ریشه ندارد $x_s = -\frac{b}{2a} = \frac{4}{2} = 2$

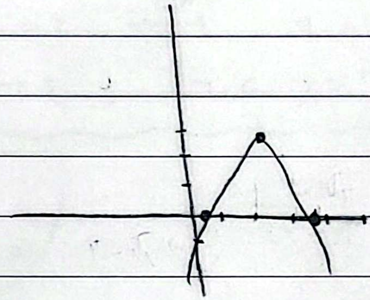
$y_s = 4 - 8 + 7 = 3$



ب) $y = -x^2 + 4x - 1$

$\Delta = 16 - 4 = 12$ $\frac{-4 \pm 2\sqrt{3}}{-2}$

$2 \pm \sqrt{3}$ $x_s = \frac{-4}{-2} = 2$ $y_s = 3$



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② الف) $\Delta > 0$

$2x^2 + (m+1)x + \frac{1}{2}m + 2 = 0$ → $4m + 16$

$\Delta = m^2 + 2m + 1 - 4(2)(\frac{m}{2} + 2) = m^2 - 2m - 15$ $(m+3)(m-5)$

$m^2 - 2m - 15 > 0$
	-3		5	
$+$	0	$-$	0	$+$

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

ب) $\Delta = 0$ → $m = \{-3, 5\}$

ج) $\Delta < 0$ $m \in (-3, 5)$

د) $\Delta \geq 0$ $m \in [-3, 5]$

③ الف)

$y = (m-2)x^2 - \overbrace{(2m+2)}^{-b} x + 10$

$\Delta = 4m^2 + 4 + 8m - 40(m-2) = 4m^2 - 32m + 84$

$-40m + 80$

$\Delta < 0 \Rightarrow \oplus$

$\Delta > 0 \rightarrow 4(m^2 - 8m + 21) > 0 \rightarrow$ همواره برقرار

$S < 0 \rightarrow \frac{2m+2}{m-2} < 0 \quad m \in (-1, 2)$ (-1) (2)

$P > 0 \quad \frac{10}{m-2} > 0 \quad m > 2 \quad \cap \rightarrow \emptyset$

ب) $P < 0 \Rightarrow S < 0 \rightarrow \frac{10}{m-2} < 0 \quad m < 2$ $\quad \frac{2m+2}{m-2} < 0 \quad m \in (-1, 2)$

$\cap \rightarrow m \in (-1, 2)$

④

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

الف) $(-\infty, 2) \quad m < 2 \quad \frac{10}{m-2} < 0 \quad P = \frac{c}{a} < 0 \quad$ همواره برقرار $\quad \Delta > 0 \rightarrow$ ✓

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

$6m = 6 \quad \boxed{m = 1}$

⑤ $\Delta = 4\sin^2\alpha - 4 = 4(\sin^2\alpha - 1)$

$\sin^2\alpha - 1 \geq 0 \quad \sin^2\alpha \geq 1 \rightarrow \sin^2\alpha = 1$

$\begin{cases} \sin\alpha = 1 \\ \sin\alpha = -1 \end{cases}$

$\frac{2}{3}x^2 - 2x + \frac{3}{2} \rightarrow x = -\frac{b}{2a} = \frac{2}{\frac{4}{3}} = \frac{3}{2}$

$\frac{2}{3}x^2 + 2x + \frac{3}{2} \rightarrow x = -\frac{b}{2a} = \frac{-2}{\frac{4}{3}}$ غ ق

s.a.m

$$y = \frac{(3x+1)(x-1)}{(3x^2-2x-1)(4x^2-4x-3)} \quad \frac{(x+1)(2x-3)}{(1-x)(x+1)} = \frac{(-3x-1)(2x-3)}{1-x^2}$$

$$\max = \frac{-\Delta}{4a} \qquad \Delta = 17 \qquad -4x^2+13x+3=0$$

$$\frac{17}{24} \qquad \boxed{\frac{17}{24}}$$

(4)

$$2mx^2-(m+2)x-2=0$$

(5)

$$S_5 = 5P+1 \qquad \alpha^2+\beta^2=? \qquad 3m+4 = 7m-10$$

$$S=\frac{m+2}{m} \qquad P=\frac{-2}{m} \qquad \frac{3m+4}{m} = \frac{-10}{m}+7 = \frac{7m-10}{m} \downarrow \boxed{m=2}$$

$$S=\frac{4}{2}=\frac{2}{1} \qquad P=\frac{-1}{2} \qquad \alpha^2+\beta^2 = S^2-2P = \frac{9}{4}+1 = \boxed{\frac{13}{4}}$$

$$S=5$$

$$x^2-5x+2=0$$

$$2(5-\beta) \qquad \frac{2\alpha+\beta^5}{5\beta^2} = ?$$

(8)

$$\beta^2 = 5\beta-2$$

$$\beta^3 = 5\beta^2-2\beta = 23\beta-10$$

$$\beta^4 = \beta(23\beta-10) = 23\beta^2-10\beta = 105\beta-46$$

$$\beta^5 = \beta(105\beta-46) = 437\beta-230$$

$$\frac{20-4\beta+437\beta-230}{25\beta-10} = (19)$$

$$\rightarrow \frac{437\beta-195}{25\beta-10} = 19$$

s.a.m

$y_1 = ax^2 + bx + c$ $\xrightarrow{-3}{2}$ $x = -3$ $\begin{cases} y_1 = 9a - 3b + c \\ y_2 = 2 \end{cases}$ (9)

$y_2 = 2x + 10$ $\quad 9a - 3b + c = 2$ $\quad 9a = 3b$ $\quad b = 3a$

$x = 2 \rightarrow \begin{cases} y_1 = 4a + 2b + c \\ y_2 = 14 \end{cases}$ $\quad 4a + 2b = 10$

$2a + b = 5 \rightarrow 4a + 2a = 10 = 5a = 5$

$a = 1$, $b = 3$ $\rightarrow$ طول رأس $= x_s = \frac{-b}{2a} = \frac{-3}{2}$

$y = 2x^2 + (m+1)x + m + 4 = x$ $\rightarrow \Delta = 0$ (10)

$2x^2 + mx + m + 4 = 0$ $\quad \Delta = m^2 - 4(2)(m+4)$

$m^2 - 8m - 48 = 0$ $\quad (m+4)(m-12) = 0$ $\quad 8m + 48$

$m = \{-4, 12\}$

s.a.m