

$$\Delta = 9 - 4a^2 \rightarrow \frac{-\Delta}{4a} = \frac{1}{\lambda} \rightarrow -\frac{9-4a^2}{4a} = \frac{1}{\lambda} \rightarrow \lambda a^2 - 4a - 1 = 0$$

$$\rightarrow \Delta = 9 + 4\omega^2 = 4\omega^2 \rightarrow \omega \rightarrow a = \frac{\sqrt{4\omega^2}}{4} \rightarrow a = \omega \rightarrow a = \frac{1}{\lambda}$$

$$\rightarrow a > 0 \rightarrow a = \omega \checkmark$$

$$1) x^2 - (a+1)x + a = 0 \rightarrow \Delta = n + (n+2) = 2n+2, \frac{-b}{a} = a+1 \rightarrow 2n+2 = a+1$$

$$\rightarrow a = 2n+1 \quad / \quad D = n^2 + 2n, a \rightarrow a = n^2 + 2n$$

$$\rightarrow 2n+1 = n^2 + 2n \rightarrow (n-1)(n+1) = 0 \rightarrow n=1 \rightarrow n \in \mathbb{N} \rightarrow a = 2(1)+1 = 3$$

$$\rightarrow 1, 3 \rightarrow P = 3 \quad / \quad x^2 - (3a+1)x + b = 0 \rightarrow 3a+1 = 1 \rightarrow x^2 - 1 \cdot x + b = 0$$

$$\rightarrow \Delta = 1 \Rightarrow 2k + (2k+2) = 4k+2 = 1 \rightarrow k = \frac{1}{2} \rightarrow 4, 4 \rightarrow 4 \times 4 = 16 \quad P(1) = 3 \quad \text{و } P(2) = 3$$

$$y_1 = -ax^2 + ax + 2 \rightarrow x_{S_1} = \frac{1}{2} \rightarrow y_2 = 2bx^2 - bx - 1 \rightarrow x_{S_2} = \frac{1}{2}$$

$$\rightarrow \frac{b}{4} - \frac{b}{4} - 1 = -1 \rightarrow y_1 = y_2 \rightarrow \frac{a}{2} + 2 = -1 \rightarrow a = -12$$

$$\rightarrow y_2 = 2b(\frac{1}{2})^2 - b(\frac{1}{2}) - 1 = \frac{b}{2} - 1, y_1 = \frac{1}{2}a(\frac{1}{2})^2 + a(\frac{1}{2}) + 2 \rightarrow \frac{3a}{4} + 2$$

$$y_2 = y_1 \Rightarrow \frac{b}{2} - 1 = \frac{3(-12)}{4} + 2 \rightarrow b = -4 \rightarrow b - a = -4 + 12 = 8$$

$$y = 2\omega x^2 + 4x + 3 \rightarrow y = p x^2 + q x + r \quad p = 2\omega, q = 4$$

$$x_S = -\frac{q}{2p} \rightarrow y_S = r - \frac{q^2}{4p}$$

$$\rightarrow x_S = -\frac{4}{2 \times 2\omega} = -\frac{1}{\omega} \rightarrow a > 0 \Rightarrow x_S < 0$$

$$y_S = 3 - \frac{16}{4\omega} = 3 - \frac{4}{\omega} \rightarrow \beta > \alpha \rightarrow y_S = 3 - \frac{4}{\omega} > 0$$

$$a + b = \frac{a^2 + b^2}{2} - 1 \quad p = \frac{a+b}{2} - 1$$

$$\Delta = \Delta^2 - 2(\Delta-1) = \Delta^2 - 2\Delta + 2 = 1 \rightarrow \Delta^2 - 2\Delta - 1 = 0 \rightarrow (\Delta-3)(\Delta+1)$$

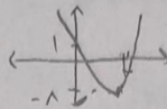
$$a+b > 0 \rightarrow \underline{a+b = 0}$$

الف) $y = 2x^2 - 4x + 1$ $a > 0 \rightarrow \min$ $\left| \begin{array}{l} \frac{f}{f} = 1 \\ -1 \end{array} \right|$

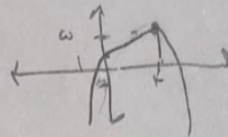
ب) $y = -2x^2 + 3x - 5$ $a < 0 \rightarrow \max$ $\left| \begin{array}{l} \frac{3}{2} \\ -\frac{31}{8} \end{array} \right|$

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الف) $x^2 - 4x + 1$ $\min$ $\left| \begin{array}{l} \frac{4}{2} = 2 \\ -1 \end{array} \right|$



ب) $-x^2 + 6x + 1$ $\max$ $\left| \begin{array}{l} \frac{6}{2} = 3 \\ 1 \end{array} \right|$



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$5x^2 + kx^2 - 9x - 2 = 0$ $\alpha + \beta = 1$ و $\alpha\beta = -2$

$(5+k)x^2 - 9x - 2 = 0 \rightarrow \delta = \frac{-b}{a} = \frac{9}{5+k}$ و $\rho = \frac{-2}{5+k} = -2$
 $\rightarrow \frac{-2}{5} \neq -2 \xrightarrow{x=1} 5+k-9-2=0 \rightarrow k=6$

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$x^2 - 3mx + m \rightarrow \Delta = 9m^2 - 4m \rightarrow \frac{\sqrt{\Delta}}{a} \Rightarrow \sqrt{9m^2 - 4m} = 1 \rightarrow 9m^2 - 4m - 1 = 0$

$m = \frac{4 \pm \sqrt{16 - 36}}{18} = \frac{4 \pm \sqrt{20}}{18} = \frac{2 \pm \sqrt{5}}{9}$ و $2x^2 - nx - m = 0$ $m = \frac{2}{9}$ $\frac{c}{a} = -\frac{m}{2}$

$\rightarrow -\frac{1}{2} \times \frac{2 \pm \sqrt{5}}{9} \Rightarrow -\frac{2 \pm \sqrt{5}}{18}$

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$\delta = \frac{m+2}{2}$ و $\rho = \frac{m}{2} \rightarrow |x_1 - x_2| = \sqrt{(\frac{m+2}{2})^2 - 4 \times \frac{m}{2}}$

$\rightarrow \sqrt{(\frac{m+2}{2})^2 - 2m} = \frac{|m-2|}{2} \rightarrow \delta = \frac{1}{2} \times \frac{|m-2|}{2} \times |m| = \frac{3}{2}$

① $m(m-2) = 3 \rightarrow m = 3$
 ② $m(m-2) = -3 \rightarrow m = -1$

$\Rightarrow y = x^2 - mx + 1 \rightarrow x_\delta = \frac{m}{2} \xrightarrow{m=3} \frac{3}{2}$
 $x_\rho = \frac{m}{2} \xrightarrow{m=-1} -\frac{1}{2}$

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