

$$-\frac{\Delta}{\epsilon a} = y_{min} \Rightarrow \frac{\epsilon a^2 - 4}{\epsilon} = \frac{v}{\lambda} \Rightarrow \lambda a = \sqrt{\epsilon a^2 - 4v}$$

$$\epsilon \lambda a^2 - 2\lambda a - v^2 = 0 \Rightarrow \lambda a^2 - va - \lambda = 0 \Rightarrow a = \frac{v \pm \sqrt{v^2 + 4\lambda}}{2}$$

$$a_1 = 2, a_2 = -\frac{9}{\lambda} \Rightarrow \boxed{a = 2} \checkmark$$

ریشه های معادله اول = $2k-1, 2k+1$

$$\left. \begin{aligned} 2k+1 + 2k-1 &= \epsilon k = a+1 \Rightarrow \epsilon k - 1 = a \\ (2k-1)(2k+1) &= \epsilon k^2 - 1 = a \end{aligned} \right\} \Rightarrow \epsilon k^2 - 1 = \epsilon k - 1$$

$$k=1 \underline{\wedge} k=0 \quad a=2 \underline{\wedge} a=1$$

ریشه های معادله دوم = $2m, 2m+2$ $2m + (2m+2) = \epsilon m + 2 = 2a+1$

$$(2m)(2m+2) = \epsilon m^2 + \epsilon m = b$$

$$a = -1 \Rightarrow m = \frac{-2-1}{\epsilon} = -1 \quad a = 2 \Rightarrow m = \frac{2-1}{\epsilon} = 2, b = 2\epsilon$$

$$\Rightarrow b - a = 2\epsilon - 2 = 2 \checkmark \quad \underline{\wedge} \quad 0 - (-1) = 1$$

$$\frac{-a}{-2a} = +\frac{1}{2} \quad \& \quad \frac{+b}{\epsilon b} = +\frac{1}{\epsilon} \quad y = \frac{b}{\lambda} - \frac{b}{\epsilon} - 2 = \frac{b}{\lambda} - 2$$

$$y = -\frac{a}{\epsilon} + \frac{a}{2} + 2 \quad u = \frac{-b}{2a} \quad -\frac{b}{\lambda} - 2 = \frac{19}{19} - \frac{19}{\epsilon} + 2 = -1 \Rightarrow b = -1$$

$$\frac{2b}{\epsilon} - \frac{b}{2} - 2 = 2 + \frac{a}{\epsilon} \quad \frac{b}{2} - \frac{b}{2} - 2 = -2 \Rightarrow a = -13 \quad a - b = -19 - (-1) = -18$$

$$\alpha + \beta = -\frac{\epsilon}{2\omega\alpha}, \alpha\beta = \frac{\beta}{2\omega\alpha} \Rightarrow \beta = 2\omega\alpha^2\beta \Rightarrow \beta(2\omega\alpha^2 - 1) = 0$$

$$\left. \begin{aligned} \beta = 0 \\ \alpha < 0 \end{aligned} \right\} \begin{aligned} 2\omega\alpha^2 - 1 = 0 \Rightarrow \alpha = \pm \frac{1}{\omega} \\ -\frac{\epsilon}{2\omega\alpha} - \alpha = \beta \xrightarrow{\alpha = \frac{1}{\omega}} -\frac{\epsilon}{\omega} - \frac{1}{\omega} = -1 \times \\ \xrightarrow{\alpha = \frac{1}{\omega}} \frac{\epsilon}{\omega} + \frac{1}{\omega} = \beta = 1 \\ \alpha > \beta \end{aligned}$$

$$\Rightarrow \alpha = -\frac{1}{\omega}, \beta = 1$$

مقادیر $\rightarrow -\omega x^2 + \epsilon x + 1$ طول = $-\frac{\epsilon}{-1} = \frac{\epsilon}{\omega}$ و عرض = $\frac{9}{\omega}$

ناب اول

$$S = \alpha + \beta = \alpha^2 + \beta^2 - 12, P = \alpha + \beta - 1 \quad \alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$$

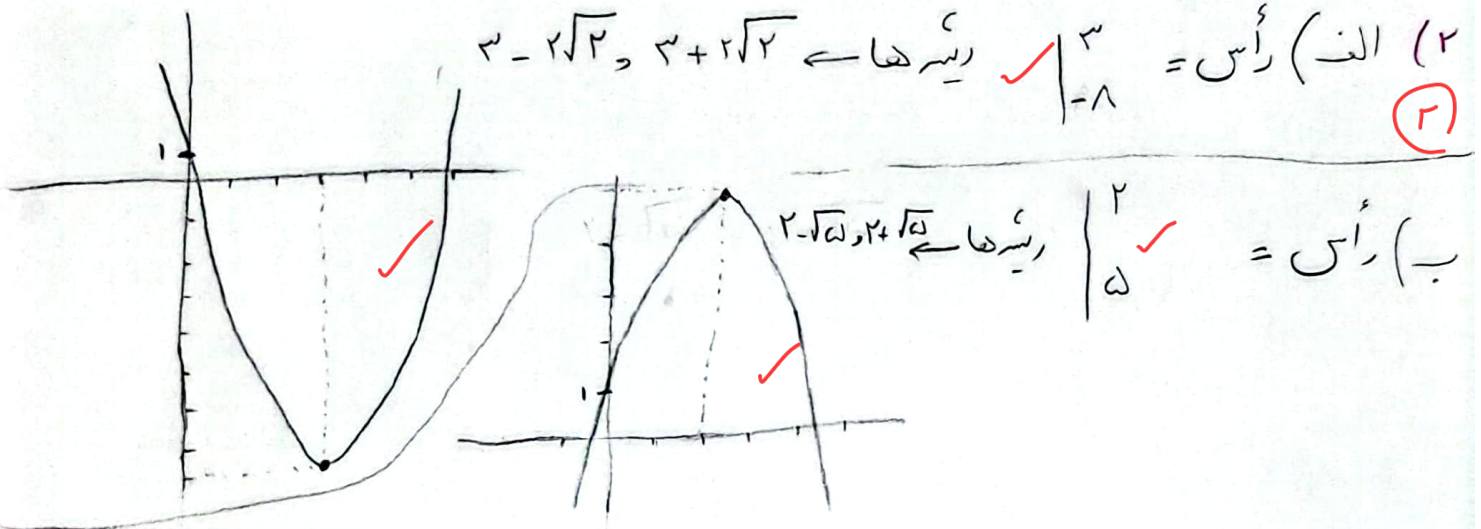
$$\alpha + \beta = (\alpha + \beta)^2 - 2(\alpha + \beta - 1) - 12 \xrightarrow{\beta + \alpha = S} S = S^2 - 2(S-1) - 12$$

$$S = S^2 - 2S + 2 - 12 \Rightarrow S^2 - 4S - 10 = 0 \quad S = \frac{4 \pm \sqrt{16 + 40}}{2} = \begin{cases} \omega \checkmark \\ -2 \times \end{cases}$$

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(۱) (الف) طول = $-\frac{b}{2a} = -\frac{1}{2} = -\frac{1}{2}$ عرض = $-\frac{\Delta}{4a} = -\frac{1-1}{4} = 0$ محققاً نقطه $(-\frac{1}{2}, 0)$ و دو ریشه دارد و نقطه \min دارد

(ب) طول = $-\frac{b}{2a} = -\frac{3}{2} = -1.5$ عرض = $-\frac{\Delta}{4a} = -\frac{9-9}{4} = 0$ محققاً نقطه $(-1.5, 0)$ و ریشه ندارد و نقطه \max دارد



(۲) (الف) رأس = $(-1, -1)$ ریشه‌ها $3 - 2\sqrt{2}$ و $3 + 2\sqrt{2}$

(ب) رأس = $(-1.5, 0)$ ریشه‌ها $2 + \sqrt{5}$ و $2 - \sqrt{5}$

(۳) $x^2 - 5x + 6 = 0 \rightarrow x^2 - x + 2 = 0 \rightarrow \begin{cases} \alpha = -1 \\ \beta = 2 \end{cases}$

۱- و ۲ باید در معادله درجه سوم صدق کنند
 $\alpha = -1: -1 + k + 6 = 0 \rightarrow k = -3$
 $\beta = 2: 4 + 2k - 6 = 0 \rightarrow k = -3$

(۴) (۲) $\sqrt{\beta} - \sqrt{\alpha} = 1 \Rightarrow \alpha + \beta - \sqrt{2\alpha\beta} = 1$
 $\alpha + \beta = 2m \quad \alpha\beta = m$
 $\sqrt{m} = t \Rightarrow 2t^2 - 2t - 1 = 0 \Rightarrow t = \frac{2 \pm \sqrt{4+8}}{4} = \frac{2 \pm 2\sqrt{3}}{4} = \frac{1 \pm \sqrt{3}}{2}$
 \Rightarrow $-\frac{1}{2}$ ریشه‌ها ✓

$\frac{m}{2} = \alpha\beta, \frac{m+2}{2} = \beta + \alpha$ نقطه تقاطع = m
 $(\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta = \frac{4m}{2} - 4m = 2m - 4m = -2m = \alpha - \beta$ (۱)
 $S_{\Delta} = \frac{1}{2} \times \frac{m-2}{2} \times m = \frac{m(m-2)}{4} = 1 \Rightarrow m^2 - 2m - 4 = 0$
 $m \in \{1 + \sqrt{5}, 1 - \sqrt{5}\} \Rightarrow$ ریشه‌ها معادله $\in \{\frac{1}{2}, \frac{1+\sqrt{3}}{2}, \frac{1-\sqrt{3}}{2}\}$ $S_{\Delta} = \frac{3}{4}!$

$$m = \text{عرض از جانب} = \text{ارتفاع} = \frac{\sqrt{\Delta}}{|a|} \text{ و اختلاف ریشه ها} = \text{طول قاعده}$$

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$$\frac{\sqrt{\Delta}}{|a|} = \frac{|m-2|}{2} \quad S_{\Delta} = \frac{1}{2} \times \frac{|m-2|}{2} \times |m| = \frac{3}{2} \rightarrow \begin{cases} m = -1 \\ m = 3 \end{cases}$$

$$m = -1 \rightarrow y = x^2 + x + 1 \rightarrow \frac{-b}{2a} = \frac{-1}{2}$$

$$m = 3 \rightarrow y = x^2 - 3x + 1 \rightarrow \frac{-b}{2a} = \frac{3}{2}$$

$$x^2 - (a+1)x + a = 0 \xrightarrow{a+b+c=0} \begin{cases} x_1 = 1 \\ x_2 = a = 3 \end{cases} \text{ فرد متغایر!}$$

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$$x^2 - (3(3)+1)x + b = 0 \rightarrow x^2 - 10x + b = 0 \xrightarrow{S=10} \begin{cases} x_1 = 4 \\ x_2 = 6 \end{cases} \text{ زوج متغایر!}$$

$$(4 \times 6) - (1 \times 3) = \boxed{21}$$

$$S_1 \left(\frac{1}{2}, \frac{a^2 + na}{2a} \right) \quad S_2 \left(\frac{1}{2}, \frac{b^2 + nb}{-nb} \right)$$

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$$\frac{a}{2} + 2 = \frac{b}{2} - \frac{b}{2} - 1 \rightarrow a = -12 \quad \left. \vphantom{\frac{a}{2} + 2} \right\} b - a = \boxed{4}$$

$$-\frac{a}{14} + \frac{a}{2} + 2 = -\frac{b}{1} - 1 \rightarrow b = -4$$