$P = \frac{c}{a} , S = \frac{-b}{a} \Rightarrow P = -5 , S = 7 \Rightarrow r^2 - 7r - 5 = 0 \Rightarrow -10 + (105) + 14 = 109$ — 8 — 0

۹-

$kx^2 - 4x - 6 = -4x - 4 \Rightarrow kx^2 = 2 \quad x = \frac{-b}{2a} \quad k \times \frac{4}{4k^2} = 2$ — ۰/۵

$\Rightarrow k = \frac{1}{2} \Rightarrow y_s = \frac{-\Delta}{4a} \Rightarrow \frac{-(16+12)}{2} = -14$

۱۰-

$mx^2 - (m+1)x - (1+m) \Rightarrow 5m^2 + 6m + 1 < 0 \Rightarrow m \to -1 , \; -\frac{1}{5}$ — ۱/۷۵

	-1		$-\frac{1}{5}$	
+		−		+

$\Rightarrow -1 < m < -\frac{1}{5}$ هیچ مقدار صحیح!

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۱۴

$x^2 - 5x + 2 = 0 \Rightarrow \begin{cases} \frac{c}{a} = 2 = \alpha\cdot\beta = P \\ \frac{-b}{a} = 5 = \alpha+\beta = S \end{cases}$

$\frac{4(\frac{2}{\beta}) + \beta^5}{5\beta^2} = \frac{\frac{8}{\beta} + \beta^5}{5\beta^2}$ (۲) -1

$= \frac{a^2\cdot\beta^2 + \beta^6}{5\beta^2} = \frac{a^2}{5} + \frac{\beta^4}{5} = \frac{S^2 - 2SP}{5} = \frac{125 - 3(5)(2)}{5} = 19$ ✓

$\frac{2 - 1/5}{2} = 1/75 = x_S = \frac{-b}{2a} = \frac{x_1 + x_2}{2} \Rightarrow x_1 + x_2 = 1/5$ ✓ (۲) -2

$\frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4k^2 - 20}}{1} = \frac{4k}{3} \Rightarrow 4k^2 - 20 = \frac{16k^2}{9}$ (۲) -3

$\Rightarrow 36k^2 - 180 - 16k^2 = 0 \Rightarrow 20k^2 = 180 \Rightarrow k^2 = 9 \Rightarrow \left[\frac{9}{2}\right] = 4$ ✓

$\frac{x_1 + x_2}{2} = x_S \Rightarrow \frac{2-5}{2} = x_S = -1 \Rightarrow \frac{\alpha+\beta}{2} = -1 \Rightarrow S = -2$ ✓ -4 (۰/۵)

$\alpha^2 + 2\alpha\beta + \beta^2 = -2 \Rightarrow 2\alpha\beta + 5 = -2 \Rightarrow \alpha\beta = \frac{-7}{2} \Rightarrow ax^2 + Sx + P = 0$

$ax^2 - 2x - \frac{7}{2} = 0 \xrightarrow{x=0} y = -\frac{7}{2}$

$\Delta = 25 + 4m > 0 \Rightarrow m > \frac{-25}{4}$, $\frac{-5 + \sqrt{25+4m}}{-2} < \frac{9}{2} \Rightarrow \sqrt{25+4m} > -4$ -5 (۱)

$\Rightarrow m > \frac{-9}{4}$, $\frac{-5 - \sqrt{25+4m}}{-2} > \frac{9}{2} \Rightarrow m < \frac{9}{4}$ $\xrightarrow{I \cap II \cap III}$

$\frac{-25}{4} < m < \frac{-9}{4} = \boxed{2.5} \rightarrow -4{,}25 < m < -2{,}25 \rightarrow$ اعشار

$m > 0$, $\frac{-\Delta}{4a} = 2 \Rightarrow \frac{-(144 - 20m^2 + 4m)}{8m} = 2 \Rightarrow 5m^2 - 2m - 24 = 0$ -6 (۲)

$\Rightarrow m = 2, \frac{-12}{5} \xrightarrow{I \cap II} m = 2 \Rightarrow 2x^2 - 12x + 14 \Rightarrow x_S = \frac{-b}{2a}$

$\frac{12}{6} = \boxed{2}$ ✓

$\frac{x_1 + x_2}{2} = x_S \Rightarrow \frac{2-5}{2} = -1 \Rightarrow \frac{-b}{2a} = -1 \xrightarrow{\times 2} \frac{-b}{a} = -2 = S$ -7 (۲)

$a^2 + \beta^2 = 5 \Rightarrow S^2 - 2P = 5 \Rightarrow 4 - 2P = 5 \Rightarrow P = \frac{-1}{2}$

$\Rightarrow \frac{c}{a} = -\frac{1}{2} \xrightarrow{c=\frac{-1}{2}a} ax^2 + 2ax = -\frac{1}{2}a \xrightarrow{m=-b=1} x = 1$

$\Rightarrow a = \frac{-2}{3} \Rightarrow -\frac{1}{2}a = \frac{-1}{2} \times \frac{-2}{3} = \boxed{\frac{1}{3}}$ ✓

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۴- A و B هم‌عرض‌اند: $x_S = \frac{-b}{2a} = \frac{x_A + x_B}{2}$

$x_S = \frac{-a+3}{2} = -1 = \frac{-b}{2a} \rightarrow S = \frac{-b}{a} = \boxed{-2}$

$y - 1 = a(x-(-1))^2 \rightarrow y = ax^2 + 2ax + a + 1$ ← معادله سهمی

$\alpha^2 + \beta^2 = a \rightarrow S^2 - 2P = a \xrightarrow[P = \frac{a+1}{a}]{S=-2} (-2)^2 - 2\left(\frac{a+1}{a}\right) = a \rightarrow a = \frac{-2}{3}$

عرض از مبدأ $= a + 1 = \frac{1}{3}$

۵- $x = \frac{-b \mp \sqrt{\Delta}}{2a} \rightarrow \frac{-a \mp \sqrt{2a + 4m}}{-2} < \frac{9}{2} \rightarrow \mp\sqrt{2a+4m} < 4$

$0 \leq 2a + 4m < 16 \rightarrow -4,25 \leq m < -2,25 \rightarrow m \in \{-3, -4, -5, -6\}$

۴ مقدار

۸- $x^2 = t \rightarrow t^2 - 7t - 5 = 0 \rightarrow t = \frac{7 \mp \sqrt{69}}{2} \rightarrow x^2 = \frac{7 + \sqrt{69}}{2}$

$x = \mp\sqrt{\frac{7+\sqrt{69}}{2}} \rightarrow S = 0 \quad P = -\frac{7+\sqrt{69}}{2}$

$2P^2 - 3SP + 3S = \boxed{59 + 7\sqrt{69}}$

۹- $S(\alpha, \beta)$

$\begin{cases} \alpha = \frac{4}{2k} = \frac{2}{k} \\ \beta = k\alpha^2 - 4\alpha - 4 \xrightarrow{\times 2} \beta + 4\alpha + 4 = k\alpha^2 = k\left(\frac{4}{k^2}\right) \end{cases}$

$\beta = -4\alpha - 4$

$\beta + 4\alpha = -4$ ★

$2 = \frac{4}{k} \rightarrow k = 2 \rightarrow \alpha = 1$

$\boxed{\beta = -8}$