امید روشن

$x^2 - 5x + 2 = 0 \to S = \frac{-(-5)}{1} = 5 ,\ P = \frac{2}{1} = 2 = \alpha\beta \to \beta = \frac{2}{\alpha}$

$\frac{4\alpha + \beta^5}{5\beta^2} = \frac{4\alpha}{5\beta^2} + \frac{\beta^3}{5} = \frac{4\alpha}{5\frac{4}{\alpha^2}} + \frac{\beta^3}{5} = \frac{\alpha^3 + \beta^3}{5} = \frac{(\alpha+\beta)^3 - 3\alpha\beta(\alpha+\beta)}{5}$

$5^3 - (3\times2\times5) = \frac{95}{5} = 19$

$\begin{cases} -4 = 9\alpha + 3b + c \\ -4 = 2.25a + 1.5b + c \end{cases} b = -1.5a \to S = -\frac{b}{a} = \frac{-(-1.5\alpha)}{\alpha} = 1.5$

$|\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4k^2 - 20}}{1} = \frac{4}{3}k \to 2\sqrt{k^2 - 5} = \frac{4}{3}k = 3\sqrt{k^2-5} = 2k \to 9k^2 - 45 = 4k^2$

$5k^2 = 45 \to k^2 = 9 \to \left[\frac{9}{2}\right] = [4.5] = 4$

$\frac{-b}{2a} = \frac{-5+3}{2} \to -\frac{b}{a} = S = -2 ,\ S(-1,1) \} \alpha^2 + \beta^2 = (-2)^2 - 2P = 5$

$P = -\frac{1}{2} \to y = a(x^2 + 2x - \frac{1}{2}) \to y = 1 ,\ x = -1 \to a((-1)^2 - 2 - \frac{1}{2}) = 1$

$a = -\frac{2}{3} \to y = -\frac{2}{3}(x^2 + 2x - \frac{1}{2}) \overset{x=0}{\Rightarrow} y = -\frac{2}{3}(0 + 0 - \frac{1}{2}) = \frac{1}{3}$

---

① $x = \frac{-5 \pm \sqrt{25 + 4m}}{-2} < \frac{9}{2} \to 5 + \sqrt{25 + 4m} < 9 \to \sqrt{25 + 4m} < 4 \to 25 + 4m < 16$

$m < -\frac{9}{4}$

② $\Delta > 0 \to 25 + 4m > 0 \to -\frac{25}{4} < m \}\ 1,2 \to -\frac{25}{4} < m < -\frac{9}{4} \to -3, -4, -5, -6 \to 4$ عدد

$y_{min} = 2 = \frac{-(144 - 20m^2 + 4m)}{4m} = \frac{5m^2 - m - 36}{m} \to 5m^2 - 3m - 36 = 0 \to$

$(5m + 12)(m - 3) = 0\ m \begin{cases} ①\ 3 \\ ②\ -\frac{12}{5} \end{cases}$

$m > 0$ غ ق ق

$\xrightarrow{m=3} y = 3x^2 - 12x + 14 \to -\frac{b}{2a} = \frac{-(-12)}{3\times2} = 2 \to x = 2$

معادله محور تقارن

$\alpha, a, \beta \to a^2 = \alpha\beta \to P \to 2a - 1 = a^2 \to -a^2 + 2a - 1 = 0 \to -(a^2 - 2a + 1) = 0$

$-(a-1)^2 = 0$

$a = 1$

$x^4 - 7x^2 - 5 ,\ t^2 - 7t - 5 = 0 \to t = \frac{7 \pm \sqrt{69}}{2} \begin{cases} \frac{7 + \sqrt{69}}{2} \\ \frac{7 - \sqrt{69}}{2} < 0 \end{cases}$ غ ق ق

$\to x^2 = \frac{7 + \sqrt{69}}{2} \to x^2 - (\frac{7 + \sqrt{69}}{2}) = 0$

$S = 0 ,\ P = -(\frac{7 + \sqrt{69}}{2}) \} 2P^2 - 3SP + 2S = 2\frac{(7 + \sqrt{69})^2}{4} - 0 + 0 = \frac{49 + 69 + 14\sqrt{69}}{2}$

$\to 59 + 7\sqrt{69}$

$y = kx^2 - 4x - 4 \longrightarrow S \left| \begin{matrix} \frac{2}{k} \\ \frac{-(16+24k)}{4k} = \frac{-4-4k}{k} \end{matrix} \right.$

$y = -4x - 4 \longrightarrow -4\left(\frac{2}{k}\right) - 4 = \frac{-4-4k}{k} \longrightarrow \frac{-8-4k}{k} = \frac{-4-4k}{k} \longrightarrow$

$\frac{-4+2k}{k} = 0 \longrightarrow k = 2 \longrightarrow \frac{-4-4k}{k} = \frac{-4-4(2)}{2} = -8$

$y = -mx^2 + mx + 1$
$y = -x - 2$
$\Big\} \rightarrow -mx^2 + mx + 1 = -x - 2 \rightarrow mx^2 + (m-1)x - m - 1 = 0$

اگر جواب نداشته باشد $\Delta < 0 \rightarrow (m+1)^2 + 4m(m+1) < 0$

$\rightarrow (m+1)(m+1+4m) < 0 \rightarrow (m+1)(5m+1) < 0 \rightarrow$

$+$	$-$	$+$
$-\infty$	$-\frac{1}{5}$	-1

$\rightarrow m \in (-1, -\frac{1}{5})$ عدد صحیح وجود ندارد