۱

$S\left|\begin{matrix}-1\\9\end{matrix}\right.$ $\left|\begin{matrix}3\\1\end{matrix}\right.$ $y=a(x+1)^2+9$ $1=a(4)^2+9 \Rightarrow 16a+9=1$

$16a=-8$ $a=-\frac{1}{2} \Rightarrow -\frac{1}{2}(x+1)^2+9$

۲

$2x^2+mx+m+6=0$

$\Delta>0$ $m^2-4(m+6)(2)>0$ $m^2-4(2m+12)>0$ $m^2-8m-48>0$ $(m-12)(m+4)$ $m>12$ $m<-4$ ①

$S>0$ $\frac{-m}{2}>0$ $m<0$ ②

$P>0$ $\frac{m+6}{2}>0$ $m>-6$ ③

① ∩ ② ∩ ③ $\Rightarrow -6<m<-4$

$(-6,-4)$

۳

$3x^2+(2m-1)x+2-m=0 \Rightarrow \Delta>0$ $S=\frac{1}{P}$

$\frac{1-2m}{3}=\frac{3}{2-m} \Rightarrow (1-2m)(2-m)=9 \Rightarrow 2-m-4m+2m^2=9$

$\Rightarrow 2m^2-5m-7=0 \Rightarrow m=-1, \frac{7}{2}$ $m=\frac{7}{2}$

[illegible]!!

۴

$x^2-x-4=0$ مجموع ریشه‌ها $S=x_1^2+x_2^2+\frac{1}{x_1}+\frac{1}{x_2}=S^2-2P+\frac{S}{P}$

$S=1$ $P=-4$ $1-2\times-4+\frac{-1}{4}=9-\frac{1}{4}=\frac{35}{4}$ S

$(x_1^2+\frac{1}{x_2})(x_2^2+\frac{1}{x_1}) \Rightarrow (x_1 . x_2)^2+x_1+x_2+\frac{1}{x_1 . x_2} \Rightarrow$

$P^3+S^2-2P+\frac{1}{P} \Rightarrow -64+9+(-\frac{1}{4}) \Rightarrow -\frac{221}{4}$

$y=x^2-\frac{35}{4}x-\frac{221}{4}$

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$\sqrt[3]{x^4}-\frac{1}{\sqrt[3]{x^2}}=2\sqrt[3]{x}$, $\frac{\sqrt[3]{x^6}-1}{\sqrt[3]{x^2}}=2\sqrt[3]{x}$

$x^2-1=2x$ $x^2-2x-1=0$ $S=2$

$3x^2 - ax + 4 = 0 \qquad \alpha, 3\alpha \qquad 4\alpha = \frac{a}{3} \qquad 3\alpha^2 = \frac{4}{3} \qquad \alpha^2 = \frac{4}{9}$

$\alpha = \pm\frac{2}{3}$

$4\times\frac{2}{3} = \frac{a}{3}$, $4\times -\frac{2}{3} = -\frac{a}{3}$ } $8-(-8) = \cdot \qquad 8+8 = 16$ (6)

$a \geq 0$ (1)

$\Delta \geq 0 \quad (2+3a)^2 \geq 0 \quad a \in \mathbb{R}$ (2)

$S \geq 0 \quad \frac{-3a-2}{a} \geq 0 \qquad \frac{-\frac{2}{3} \quad 0}{- \; + \; -} \qquad [-\frac{2}{3}, 0)$ (3)

$P = 0$ ✓

$(1) \cap (2) \cap (3) = \phi$ گزینه (7)

$y = x^2 + ax - 3 \Rightarrow \frac{-a}{1} = \frac{2}{-1} \quad a = 2$

$y = -x^2 - 2x + b$

$x^2 + 2x - 3 = 1$

$-x^2 - 2x + b = 1$

$b - 3 = 2 \quad b = 4$ $\qquad 2\times 4 = 8$ (8)

$2ax^2 + ax - 6 = 0 \qquad 2x^2 - ax + b = 0 \qquad \alpha + \beta + 1 = \frac{a}{2} \qquad \frac{1}{2} = \frac{a}{2}$

$\alpha + \beta = \frac{-1}{2} \quad \alpha \cdot \beta = -3 \qquad (\frac{1}{2} + \alpha)(\frac{1}{2} + \beta) = \frac{1}{4} - \frac{1}{4} - 3 = \frac{b}{2} \qquad a = 1$

$\Rightarrow b = -6$

$\left[\frac{1 \cdot -6}{4}\right] = \left[\frac{-6}{4}\right] = -2$ (9)

$x^2 + 6x + m = 0 \qquad x^2 + 2x - 3m = 0$

$\alpha + \beta = -6 \Rightarrow \alpha = -6 - \beta \qquad -6 - \beta = -2 - \gamma$

$\alpha + \gamma = -2 \Rightarrow \alpha = -2 - \gamma \qquad -\beta + \gamma = 4$ (10)