Subject. A تست بزنم ۱- بنام خدا Day. Month. Year.

①

$x_1=\alpha \qquad P=\frac{c}{a}=\frac{4}{3}=3\alpha^2 \to \alpha^2=\frac{4}{9} \to \alpha=\pm\frac{2}{3}$

$x_2=3\alpha$

$\alpha \to \alpha=\frac{2}{3} \Rightarrow x_1=\frac{2}{3} \quad x_2=2 \Rightarrow S=\frac{a}{3}=\frac{8}{3} \to a=8$

$ \to \alpha=-\frac{2}{3} \Rightarrow x_1=-\frac{2}{3} \quad x_2=-2 \Rightarrow S=\frac{a}{3}=-\frac{8}{3} \to a=-8$

$|8-(-8)|=\boxed{16}$

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②

$\alpha+\beta=\frac{m+14}{36} \qquad \alpha\beta=\frac{1}{36}$

$\sqrt{\frac{1}{\alpha}}+\sqrt{\frac{1}{\beta}}=5 \xrightarrow{(\ )^2} \frac{1}{\alpha}+\frac{1}{\beta}+2\sqrt{\frac{1}{\alpha\beta}}=25 \to \frac{\alpha+\beta}{\alpha\beta}+2\sqrt{\frac{1}{\alpha\beta}}=25$

$m+14+12=25 \to m=-1 \Rightarrow -x^2+3x+2=0 \Rightarrow x=\frac{-3\pm\sqrt{9+8}}{-2}$

$\frac{-3+\sqrt{17}}{-2} \times \frac{-3-\sqrt{17}}{-2}=\frac{9-17}{4}=-2$

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③

$\alpha\beta=-2 \quad \alpha+\beta=1 \to x^2-x-2=0$ پس معادله اصلی بر این معادله بخش پذیر است

$$\begin{array}{l|l} 4x^3+Kx^2-9x-2 & x^2-x-2 \\ 4x^3-4x^2-8x & 4x+1 \\ \hline (K+4)x^2-x-2 & \\ (1)\,x^2-x-2 & \\ \hline 0 & \end{array}$$

$\Rightarrow K+4=1 \Rightarrow \boxed{K=-3}$

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④

$2.5\alpha^2+2.5\beta^2+(0.5\alpha^2-0.5\beta^2)=2.5(\alpha^2+\beta^2)+0.5(\alpha^2-\beta^2)$

$2.5(36-2a)+\frac{1}{2}\left((-6)(-2\sqrt{9-a})\right)=90-5a+6\sqrt{9-a}=85+12\sqrt{2}$

$-5a+6\sqrt{9-a}=-5+12\sqrt{2} \Rightarrow \boxed{a=1}$

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⑤

$x^2=t \to t^2-7t-5=0 \to t = \frac{7+\sqrt{69}}{2} \checkmark =x^2$

$ \to \frac{7-\sqrt{69}}{2} \to$ غ ق ق

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

$2P^2-\cancel{2^3SP}+\cancel{2S}=2\left(\frac{49+69+14\sqrt{69}}{4}\right)=59+7\sqrt{69}$

$0 \qquad 0$

۶

$2x^2 - ax + b = 0$

$\begin{cases} x_1 = \alpha + \frac{1}{2} \quad x_2 = \beta + \frac{1}{2} \\ S = \alpha + \beta + 1 = \frac{a}{2} \end{cases}$

$-\frac{1}{2} + \frac{2}{2} = \frac{a}{2} \to \boxed{a = 1}$

$\Rightarrow \alpha = -\frac{3}{2} \quad \beta = 2$

$2ax^2 + ax - 6 = 0$

$x_1 = \alpha \quad x_2 = \beta$

$S = -\frac{a}{2a} = \alpha + \beta \to \alpha + \beta = -\frac{1}{2}$

$2x^2 + x - 6 = 0 \to \alpha = -2 \quad \beta = \frac{3}{2}$

$a = 1 \quad b = -6$

$\left[\frac{ab}{4}\right] = \left[-\frac{6}{4}\right] = \boxed{-2}$

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$\alpha + \beta = 1 \quad \alpha \cdot \beta = -\frac{b}{a} \to x^2 - x - \frac{b}{a} = 0 \to x^2 - x = \frac{b}{a} \to \beta^2 - \beta = \frac{b}{a} = t$

$20\alpha^2 + 20\beta^2 + 20\beta^2 - 20\beta = 20\left(1 + \frac{2b}{a}\right) + 20\left(\frac{b}{a}\right) = 20 + 60t = 17$

$60t = -3 \to \frac{b}{a} = -\frac{1}{20} \qquad \alpha - \beta = \frac{\sqrt{\Delta}}{|a|} = \sqrt{1 + \frac{4b}{a}} = \sqrt{\frac{4}{5}} = \boxed{\frac{2\sqrt{5}}{5}}$

۸

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

$x_1 = 2\alpha - 1 \quad x_2 = 2\alpha + 1$

$P = 4\alpha^2 - 1 = a$

$S = 4\alpha = a + 1$

$\alpha \to 1$, $2 \to 0 \to$ غ ق ق

$\Rightarrow \boxed{a = 3} \qquad P = 3$

$24 - 3 = \boxed{21}$

$x^2 - (3a+1)x + b = 0$

$x_1' = 2\beta \quad x_2 = 2\beta + 2$

$S' = (3(3)+1) = 4\beta + 2 \to \beta = 2$

$P = 4\beta^2 + 4\beta = b \to \boxed{b = 24}$

$P' = 24$

۹

$(\alpha + \beta)^2 - 2\alpha\beta = (-1)^2 + 2(m^2 + 1) = 1 + 2m^2 + 2 = 2m^2 + 3 = \boxed{3}$

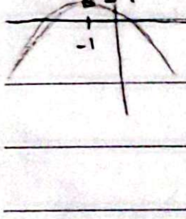
$\alpha + \beta = -1 \quad \alpha\beta = -m^2 - 1$

باید صفر شود

کمترین مقدار

۱۰

!(شکل)



$-\frac{b}{2a} = \frac{S}{2} = -1 \Rightarrow \boxed{S = -2} \qquad S^2 - 2P = 4 - 2\left(\frac{a+1}{a}\right) = 5$

$\boxed{a = -\frac{2}{3}} \qquad S^2 - 2P = 4 - 2P = 5 \to P = \frac{c}{a} = -\frac{1}{2}$

$\frac{c}{a} = -\frac{1}{2} \to c = \frac{-a}{2} = \frac{\frac{2}{3}}{\frac{2}{1}} = \boxed{\frac{1}{3}}$