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نام و نام خانوادگی ......دنیا دلاسا نصیری...... پاسخنامه تشریحی تکلیف شماره ...۱۹... کلاس ......

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$3x^2-ax-12=0$

ریشه‌ها $\to \alpha , 3\alpha$

ضرب ریشه‌ها $=3\alpha\times\alpha=\frac{4}{3}\to 3\alpha^2=\frac{4}{3}\to \alpha^2=\frac{4}{9}\to \alpha=\pm\frac{2}{3}$

$\alpha=\frac{2}{3} , 3\alpha=2$ جمع $=2+\frac{2}{3}=\frac{8}{3}=\frac{a}{3}\to a=8$ (۱

$\alpha=-\frac{2}{3} , 3\alpha=-2$ جمع $=-2-\frac{2}{3}=-\frac{8}{3}=\frac{a}{3}\to a=-8$ (۲

اختلاف $a=8-(-8)=16$

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$36x^2-(m+14)x+1=0$ ریشه‌ها $\to \alpha , \beta$

$\sqrt{\frac{1}{\alpha}}+\sqrt{\frac{1}{\beta}}=5 \xrightarrow{\text{به توان ۲}} \frac{1}{\alpha}+\frac{1}{\beta}+2\sqrt{\frac{1}{\alpha\beta}}=25$

$\frac{\alpha+\beta}{\alpha\beta}+2\sqrt{\frac{1}{\alpha\beta}}=25 \to \frac{\frac{m+14}{36}}{\frac{1}{36}}+2\sqrt{\frac{1}{\frac{1}{36}}}=25\to m+14+2\times6=25\to m=-1$

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$mx^2+3x+2=0 \longrightarrow -1x^2+3x+2=0 \longrightarrow$ ضرب $=-2$

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$4x^3+kx^2-9x-2=0$

$\alpha+\beta=1 \to \alpha+(\frac{-2}{\alpha})=1\to\frac{\alpha^2-2}{\alpha}=1\to \alpha^2-\alpha-2=0\to(\alpha-2)(\alpha+1)=0$

$\alpha\beta=-2\to\beta=-\frac{2}{\alpha}$

$\beta=-1 \leftarrow \alpha=2$ ✓ ; $\alpha=-1\to\beta=2$

$\xrightarrow{x=2} \underbrace{4\times8}_{32}+4k-18-2=0\to 4k=-12$

$k=-3$

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$x^2+6x+a=0$; $\alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=(-6)^2-2(a)=36-2a$; $|\alpha-\beta|=\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{36-4a}}{1}$

$3\alpha^2+2\beta^2=12\sqrt2+85 \leadsto \frac{5}{2}\alpha^2+\frac{5}{2}\beta^2+\frac{1}{2}\alpha^2-\frac{1}{2}\beta^2=\frac{5}{2}(\alpha^2+\beta^2)+\frac{1}{2}(\alpha-\beta)(\alpha+\beta)=85+12\sqrt2$

$\frac{5}{2}(36-2a)+\frac{1}{2}(-6)(\sqrt{36-4a})=85+12\sqrt2\to 90-5a+3\sqrt{36-4a}=85+12\sqrt2$

$90-5a=85\to a=1$

$3\sqrt{36-4a}=12\sqrt2 \xrightarrow{a=1} 3\sqrt{36-4}=3\sqrt{32}=12\sqrt2$

$4\sqrt2$

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$x^4-7x^2-5=0 \xrightarrow{x^2=t} t^2-7t-5=0\to t=\frac{7\pm\sqrt{69}}{2}$

$\to x^2=\frac{7-\sqrt{69}}{2}$ ✗

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

$2P^2-3SP+2S$

$=2\times(\frac{-7-\sqrt{69}}{2})^2-3(0)((\frac{-\sqrt{69}-7}{2}))+2\times0=$

$\frac{49+69+14\sqrt{69}}{2}=\frac{118+14\sqrt{69}}{2}=59+7\sqrt{69}$

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$2ax^2 - ax + b = 0 \to$ ریشه‌ها $= \alpha+\frac{1}{2} , \beta+\frac{1}{2} \to (\alpha+\frac{1}{2})(\beta+\frac{1}{2}) = \alpha\beta + \frac{1}{4} + \frac{1}{2}(\alpha+\beta) = \frac{b}{2}$

$2ax^2 + ax - 6 = 0 \to$ ریشه‌ها $= \alpha , \beta \to \alpha\beta = -3$; $\quad \cancel{\alpha+\beta}+1 = \frac{a}{2} \to a = 1$

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

$-3 + \frac{1}{4} + \frac{1}{2}(-\frac{1}{2}) = \frac{b}{2}$ ۶

$b = -6$

$\left[\frac{ab}{4}\right] = \left[\frac{-6 \times 1}{4}\right] = -2$

$ax^2 - ax - b = 0 \to a\alpha^2 - a\alpha - b = 0 \to \alpha^2 = \frac{a\alpha + b}{a}$

$40\beta^2 + 20\alpha^2 - 20\beta = 17 \to \beta^2 = \frac{a\beta + b}{a}$

$\frac{40(a\beta+b)}{a} + \frac{20(\alpha a + b)}{a} - 20\beta = 17 \to 17a = 40(a\beta+b) + 20(a\alpha+b) - 20a\beta = 17$ ۷

$40a\beta + 40b + 20a\alpha + a - 20a\beta = 17 \to \underbrace{20a\beta - 20a\beta}_{0} + 40b + 20a = 17 \to b = \frac{-3}{40}a$ ۰/۵

$20a(\underbrace{2\beta+\alpha}_{\beta+\underbrace{\beta+\alpha}_{1}}) = 20a\beta$ اختلاف ریشه‌ها $= \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{a^2+4ab}}{|a|} = \frac{\sqrt{a^2 - \frac{3}{10}a^2}}{|a|} = \frac{\sqrt{\frac{7}{10} \times a^2}}{|a|} = \frac{\sqrt{7}}{\sqrt{10}}$

$x^2 - (a+1)x + a = 0 \xrightarrow{\text{ریشه‌ها}} \alpha , \alpha+2 \to \begin{cases} 2\alpha + 2 = a+1 \\ a = \alpha^2 + 2\alpha \end{cases} \to 2\alpha + 2 - 1 = \alpha^2 + 2\alpha \to \alpha = \pm 1$

$x^2 - (3a+1)x + b = 0 \xrightarrow{\text{ریشه‌ها}} \beta , \beta+2$ $\quad$ α طبیعی در نظر $\to \alpha = 1 \to a = 3$

$\begin{cases} 2\beta + 2 = 3a + 1 = 10 \to 2\beta = 8 \to \beta = 4 \\ (4)(6) = 24 = +b \to b = +24 \end{cases}$ ۸

$P = 3$ اولی

$P = 24$ دومی $\to 24 - 3 = 21$

$x^2 + x - 1 - m^2 = 0 \quad \begin{cases} \alpha^2 = m^2 + 1 - \alpha \\ \beta^2 = m^2 + 1 - \beta \end{cases}$

$\alpha^2 + \beta^2$

$\to m^2 + 1 - \alpha + m^2 + 1 - \beta = m^2 + 2 - \underbrace{(\alpha+\beta)}_{-1} = 2m^2 + 3 \quad x_{min} = \frac{-b}{2a} = 0$ ۹

مقدار min $= 3$

$\begin{matrix} A(c , y) \\ B(-5 , y) \end{matrix}$ طول راس سهمی $\frac{3-5}{2} = -1$ $\quad$ طول راس سهمی $= -1$ $\quad$ " " عرض $= 1$ $\quad$ سهمی $a(x - (-1))^2 + 1 = a(x+1)^2 + 1 = ax^2 + a + 2ax + 1$

$= ax^2 + 2ax + a + 1$

$\alpha^2 + \beta^2 = 5$

$\alpha^2 + \beta^2 = S^2 - 2P = \left(\frac{-2a}{a}\right)^2 - 2\left(\frac{a+1}{a}\right) = 4 - 2\frac{(a+1)}{a} = 5$ ۱۰

$4a - 2a - 2 = 5a \to 3a = -2 \quad a = \frac{-2}{3}$

$\frac{-2}{3}x^2 + \left(\frac{-4}{3}\right)x + \frac{1}{3} = 0$

عرض از مبدا

$\alpha = 1 - \beta \qquad 40\beta^2 + 20(1-\beta) - 20\beta = 7 \Rightarrow 20\beta(\underbrace{\beta - 1}_{-\alpha}) = -1 \to \alpha\beta = \frac{1}{20} = \frac{-b}{a}$ ۱۷

$\Rightarrow a = -20b \qquad ax^2 - ax - b = 0 \to -20bx^2 + 20bx - b = 0 \qquad |\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|} = \frac{2}{\sqrt{5}}$