موضوع: علی یخزان - ردیف ۱۹ تاریخ: / /

$\frac{c}{a} = \alpha.\beta = \frac{4}{3} \Rightarrow 3\beta.\beta = 3\beta^2 = \frac{4}{3} \Rightarrow \beta^2 = \frac{4}{9} \Rightarrow \beta = \pm\frac{2}{3}$ - ۱

$\alpha = 3\beta$

اگر $\beta = +\frac{2}{3} \Rightarrow \alpha = 2 \Rightarrow \alpha + \beta = \frac{a}{3} = \frac{1}{2} \Rightarrow a = 1$

اگر $\beta = -\frac{2}{3} \Rightarrow \alpha = -2 \Rightarrow \alpha + \beta = \frac{a}{3} = \frac{-1}{3} \Rightarrow a = -1$

$1 - (-1) = 14$

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 4 \Rightarrow \frac{\sqrt{\beta} + \sqrt{\alpha}}{\sqrt{\alpha\beta}^{\frac{1}{2}}\ \frac{1}{4}} = 4$ - ۲

$(\sqrt{\beta} + \sqrt{\alpha} = \frac{4}{4})^2 \Rightarrow \alpha + \beta + 2\sqrt{\alpha\beta}^{\frac{1}{2}} = \frac{16}{36} \Rightarrow \alpha + \beta = \frac{13}{36}$

$\Rightarrow \frac{m+12}{36} = \frac{13}{36} \Rightarrow m = 1$

$mx^2 + 3x + 2 = 0 \Rightarrow -x^2 + 3x + 2 = 0 \Rightarrow \frac{c}{a} = -2$

۳ـ

$$4\alpha^3 + K\alpha^2 - 9\alpha - 2 = 0$$

$$+\quad 4\beta^3 + K\beta^2 - 9\beta - 2 = 0$$

$$4(\alpha^3+\beta^3) + K(\alpha^2+\beta^2) - 9(\alpha+\beta) - 4 = 0$$

$$4(1 - 3(-2)) + K(1 - 2(-2)) - 9(1) - 4 = 0$$

$$\underbrace{}_{7} \qquad \underbrace{}_{5}$$

$$\Rightarrow 28 + 5K - 13 = 0 \qquad 5K = -15 \Rightarrow \boxed{K = -3}$$

۴ـ

$$2/5\alpha^2 + 0/5\alpha^2 + 2/5\beta^2 - 0/5\beta^2 =$$

$$2/5(\alpha^2+\beta^2) + 0/5(\alpha^2-\beta^2) = 2/5(36-2a) + 0/5(-6)(\sqrt{36-4a})$$

$$= 12\sqrt{2} + 85 \Rightarrow 5(18-a) - 3\times 2\sqrt{9-a} = 12\sqrt{2} + 85$$

$$90 - 5a - 6\sqrt{9-a} = 12\sqrt{2} + 85 \Rightarrow a = \frac{-120\sqrt{2} - 54}{-120\sqrt{2} + 44}$$

۵- $x^4 - 7x^2 - 45 = 0 \rightarrow t^2 - 7t - 45 = 0$

$\rightarrow t = \frac{7 \pm \sqrt{49 + 180}}{2} = \frac{7 \pm \sqrt{49}}{2}$ — ×××

$t = \frac{7 + \sqrt{49}}{2}$

$\rightarrow x = \pm\sqrt{\frac{7+\sqrt{49}}{2}} \rightarrow x_1 + x_2 = 0 \rightarrow S = 0$

$P = (x_1 \cdot x_2)^2 = \frac{(7+\sqrt{49})^2}{4} \Rightarrow 2P^2 = \frac{(7+\sqrt{49})^2}{2}$

۶- $2ax^2 + ax - 4 = 0 \rightarrow -\frac{b}{a} = S = \frac{1}{2}, P = -2$

$\rightarrow \frac{a}{2} = -\frac{1}{2} + 1 \rightarrow a = 1$

$(\alpha + \frac{1}{2})(\beta + \frac{1}{2}) = \frac{b}{2} \rightarrow -2 + 0 = \frac{b}{2} \rightarrow b = -4$

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

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۷ـ

$\alpha+\beta=۱ \Rightarrow ۲۰\beta^۲+۲۰(\alpha^۲+\beta^۲)-۲۰\beta=۱۷$

$\Rightarrow ۲۰\beta(\beta-۱)+۲۰(\alpha^۲+\beta^۲)=۱۷ \Rightarrow$

$۲۰\alpha\beta+۲۰(\alpha^۲+\beta^۲)=۱۷ \Rightarrow ۲۰(-b)+۲۰(۱+۲b)=۱۷$

$\Rightarrow b=\frac{-۳}{۲۰} \Rightarrow \alpha-\beta=\sqrt{\alpha^۲+\beta^۲-۲\alpha\beta}=\sqrt{\frac{۷}{۱۰}-۲\left(\frac{-۳}{۲۰}\right)}=\sqrt{\frac{۲}{۵}}$

۸ـ

$x^۲-(a+۱)x+a=۰$

$\alpha-\beta=\frac{\sqrt{\Delta}}{|a|}=a-۱=۲ \Rightarrow a=۳$

$x^۲-(\cancel{۳a}+۱)x+b=۰ \Rightarrow \alpha'-\beta'=\frac{\sqrt{\Delta}}{|a'|}=\sqrt{۱۰۰-۴b}=۲$ (with ۱۰ written below the crossed-out ۳a)

$\Rightarrow b=۲۴ \Rightarrow |(\alpha\cdot\beta)-(\alpha'\cdot\beta')|=۲۴-۳=۲۱$

۹ـ

$\Delta>۰ \Rightarrow ۱-۴(-۱-m^۲)=۱+۴+۴m^۲\geq ۰$

$\Rightarrow ۴m^۲\geq -۵$ ✓ $\Rightarrow m$ هر مقداری می‌تواند باشد

$\alpha^۲+\beta^۲=S^۲-۲P=۲m^۲+۳ \Rightarrow ۲(۰)^۲+۳=۳$

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راس سهمی $\begin{vmatrix} x \\ y \end{vmatrix} \rightarrow x = \frac{3-5}{2} = -1 \rightarrow \frac{\alpha+\beta}{2} = -1 \rightarrow \alpha+\beta = -2$

$\alpha^2+\beta^2 = 5 \rightarrow 2\alpha\beta = (\alpha+\beta)^2 - (\alpha^2+\beta^2) = 4-5 = -1$

$\rightarrow \alpha\beta = -\frac{1}{2} \rightarrow x^2+2x-\frac{1}{2} = y \xrightarrow{x=-1} y = -\frac{1}{2}$