Subject:
Date

کلاس ۱۹ — ۱/ — میلاد ... ۱/۵

-۱

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

$P = \alpha \times 3\alpha = 3\alpha^2 = \frac{4}{3} \quad \Rightarrow \alpha = \pm\frac{2}{3}$

$4 \times \frac{2}{3} = \frac{a}{3} \longrightarrow a = 8 \longrightarrow 8 - (-8) = 16$

$4 \times \frac{-2}{3} = \frac{a}{3} \longrightarrow a = -8$

-۲

$36x^2 - (m+14)x + 1 = 0 \qquad mx^2 + 3x + 2 = 0$

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \frac{\sqrt{\beta} + \sqrt{\alpha}}{\sqrt{\alpha\beta} = \frac{1}{6}} = 5 \Rightarrow \sqrt{\alpha} + \sqrt{\beta} = \frac{5}{6} \Rightarrow \alpha + \beta + 2\sqrt{\alpha\beta} = \frac{25}{36}$

$\frac{m+14}{36} + \frac{2}{6} = \frac{25}{36} \Rightarrow m + 14 + 12 = 25 \Rightarrow m = -1 \qquad \frac{2}{m} = \frac{2}{-1} = -2$

-۳

$4x^3 + kx^2 - 9x - 2 = 0 \qquad \alpha\beta = -2 \longrightarrow \beta = \frac{-2}{\alpha}$

$\alpha + \beta = -1 \longrightarrow \alpha + \frac{-2}{\alpha} = 1 \Rightarrow \alpha^2 - \alpha - 2 = 0 \longrightarrow \alpha = 2, \beta = -1 \longrightarrow x = 2$

$32 + 4k - 18 - 2 = 0 \Rightarrow k = -3$

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$\alpha + \beta = -6 \qquad \alpha\beta = a$

$a < \beta < 0 \longrightarrow 3\alpha^2 + 2\beta^2 = 12\sqrt{2} + 85 \longrightarrow \frac{5}{2}(\alpha^2 + \beta^2) + \frac{1}{2}(\alpha^2 - \beta^2)$

$\Rightarrow \alpha^2 + \beta^2 = 36 - 2\alpha\beta \qquad \alpha^2 - \beta^2 = -6\sqrt{\Delta}$

$12\sqrt{2} + 85 = \frac{5}{2}(36 - 2\alpha\beta) + \frac{1}{2}(-6\sqrt{\Delta}) \Rightarrow 24\sqrt{2} = -6\sqrt{\Delta} \Rightarrow \sqrt{\Delta} = -4\sqrt{2}$

$34 - 36 = -2\alpha\beta \longrightarrow \alpha\beta = 1 \Rightarrow P = 1 = \frac{a}{1} \Rightarrow a = 1$

-۵

$x^4 - 7x^2 - 5 = 0 \Rightarrow t = x^2 \Rightarrow t^2 - 7t + 5 = 0 \xrightarrow{t>0} \frac{7 + \sqrt{49 + 20}}{2} \Rightarrow t = x^2 = \frac{7 + \sqrt{69}}{2}$

$\Rightarrow x = \pm\sqrt{\frac{7 + \sqrt{69}}{2}} \Rightarrow S = 0, \; P = \frac{-7 - \sqrt{69}}{2} \longrightarrow 2P^2 - 3SP + 2S = 2P^2$

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

PAPCO

$2x^2-ax+b=0 \Rightarrow S=\frac{a}{2} , P=\frac{b}{2}$ ۶-

$2ax^2+ax-6 \to S=-\frac{1}{2} \to \alpha+\beta=\frac{1}{2}=\frac{a}{2} \Rightarrow a=1$ $\Big\}$ $\left[\frac{ab}{4}\right]=-2$

$\quad \llcorner P=-3 \to b=-6$

$ax^2-ax-b=0 \qquad 40\beta^2+20\alpha^2-20\alpha=17$ ۷-

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

$\Rightarrow a=-20b \qquad ax^2-ax-b=0 \Rightarrow -20bx^2+20bx-b=0$

$\Rightarrow |\alpha-\beta|=\frac{\sqrt{\Delta}}{|a|}=\frac{2}{\sqrt{5}}$

$S=a+1=2\alpha+2$ $\Big\}$ $\alpha^2+2\alpha+1=2\alpha+2 \to \alpha=\pm 1 \xrightarrow{\in N} \alpha=1 , a=3$ ۸-

$P=a=\alpha^2+2\alpha$

$S=10=2\beta+2 \to \beta=4 , b=6\times 4=24 \qquad \Rightarrow b-a=24-3=21$

$\alpha+\beta=\frac{-b}{a}=-1$ $\Big\}$ $\to \alpha^2+\beta^2=1-2(-1-m^2)=2m^2+3 \xrightarrow{m^2\geq 0} min=3$ ۹-

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

وسط A,B $\to x_s=\frac{3-5}{2}=-1 \qquad y_s=1$ ۱۰-

$y-1=a(x+1)^2 \Rightarrow -1=a(x+1)^2 \Rightarrow (x+1)^2=\frac{-1}{a} \Rightarrow r=\sqrt{\frac{-1}{a}} \qquad x=-1\pm r$

$\alpha=-1+r \qquad \beta=-1-r \Rightarrow (\alpha^2+\beta^2)=5 \to (-1+r)^2+(-1-r)^2=5$

$\Rightarrow 2+2r^2=5 \to r^2=\frac{3}{2}$

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

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