نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ۱۹ .... کلاس ....

α و 3α $3x^2-ax+4=0$ $P=\frac{4}{3} \to \alpha\times 3\alpha=\frac{4}{3} \to 3\alpha^2=\frac{4}{3} \to \alpha^2=\frac{4}{9} \to \alpha=\frac{2}{3}, 3\alpha=2$ $\alpha=\frac{-2}{3}$ و $3\alpha=-2$ $S=a/3 \to \frac{a}{3}=2+\frac{2}{3}=\frac{8}{3}$ $\frac{a}{3}=-2-\frac{2}{3}=\frac{-8}{3}$ اختلاف $\to \frac{8}{3}-(-\frac{8}{3})=16/3$	۱
$\sqrt{\frac{1}{\alpha}}+\sqrt{\frac{1}{\beta}}=5 \xrightarrow{\text{به توان ۲}} \frac{1}{\alpha}+\frac{1}{\beta}+2\sqrt{\frac{1}{\alpha\beta}}=25 \to \frac{1}{\alpha}+\frac{1}{\beta}+12=25$ $\frac{m+14}{36}$, $\frac{\alpha+\beta}{\alpha\beta}=13 \to \frac{m+14}{\cancel{36}}\times\cancel{36}=13 \to m+14=13 \to m=-1$ $36x^2-(m+14)x+1=0 \to P=\frac{1}{36} \to \alpha\beta=\frac{1}{36}$ $P=-2 \leftarrow mx^2+3x+2$	۲
$S=1$ و $P=-2 \xrightarrow{\text{معادله}} x^2-x-2=0 \to (x+1)(x-2)=0 \to x=-1$ یا $x=2$ $4x^3+kx^2-9x-2=0 \xrightarrow{x=-1} -4+k+9-2=0 \to k=-3$ $\xrightarrow{x=2} 32+4k-18-2=0 \to k=-3$	۳
$x^2+6x+a=0 \to \alpha+\beta=-6 \to \alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=36-2a$ $3\alpha^2+2\beta^2=2(\alpha^2+\beta^2)+\alpha^2=2(36-2a)+\alpha^2=72-4a+\alpha^2$ $(\beta-\alpha)^2=(\alpha+\beta)^2-4\alpha\beta=36-4a \xrightarrow{\beta>\alpha} \beta-\alpha=\sqrt{36-4a} \to \alpha^2=\frac{-6-\sqrt{36-4a}}{2}$ $72-4a+18-a+3\sqrt{36-4a}=90-5a+3\sqrt{36-4a}$ $\alpha^2=18-a+3\sqrt{36-4a}$ $85+12\cdot$ $90-5a=85 \to a=1$	۴
$x^2=t \to t^2-7t+5=0 \to \Delta=\sqrt{49} \to t=7\pm\sqrt{\frac{49}{2}}$ $x^2=\frac{7+\sqrt{49}}{2} \to x=\pm\sqrt{\frac{7+\sqrt{49}}{2}} \to S=0$ (جمع ریشه‌ها صفر) $2P=2\left(\sqrt{\frac{7+\sqrt{49}}{2}}\right)\left(-\sqrt{\frac{7+\sqrt{49}}{2}}\right)=59+7\sqrt{49}$	۵

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

$\alpha+\frac{1}{2} , \beta+\frac{1}{2}$ $\qquad \alpha , \beta$ $\qquad \alpha\times\beta = \frac{-6}{2a} = -3$

$S = \alpha+\beta+1 = \frac{a}{2}$ $\qquad S = \alpha+\beta = \frac{a-2}{2} = -\frac{1}{2} \Rightarrow a=1$ $\qquad P = (\alpha+\frac{1}{2})(\beta+\frac{1}{2})$ ۶

$\rightarrow \alpha+\beta = \frac{a-2}{2} \rightarrow P = \frac{b}{2} \rightarrow b = -\frac{15}{2}$ $\qquad \alpha\beta + \frac{1}{2}(\alpha+\beta) + \frac{1}{4} = -\frac{15}{4}$

$[\frac{ab}{4}] = [-\frac{15}{4}] = [-1/\ldots] = -2$

$x_1 - x_2 = \frac{\sqrt{\Delta}}{a}$

$\Delta = a^2 + 4ab \rightarrow |x_1 - x_2| = \frac{\sqrt{a^2+4ab}}{|a|} = \sqrt{1+\frac{4b}{a}}$ ۷

$4ab^2 + 20a^2 - 20b = 17 \xrightarrow{\div 20} 2b^2 + a^2 - b = 17/20$ $\qquad a + 4ab = a^2 + 4b^2 - 4b^2 + 4ab$

$y\ (a+2b)^2 - 2b^2 + b = 17/20 \rightarrow \frac{4b}{a} = \frac{1}{4} \rightarrow |x_1 - x_2| = \sqrt{1+\frac{1}{4}} = \sqrt{5}/2$

$x^2 - (a+1)x + a = 0$, $S = 2x+2 = a+1$ $\qquad 2x+2 = x^2+2x+1 \rightarrow x^2 = 1$

$x , x+2$ $\qquad P = a = x^2+2x$ $\qquad a = 1\times 3 = 3$ $\qquad x = \cancel{\pm} 1$

$x^2 - (3a+1)x + b = 0 \rightarrow a = 3 \rightarrow x^2 - bx + b = 0$ ۸

$2k , 2k+2$

$S = 2k + (2k+2) = b \rightarrow 4k+2 = b \rightarrow k = 2$ $\qquad b = 4\times 6 = 24$

اختلاف حاصل ضرب ریشه‌ها $= 24 - 3 = 21$

$\alpha^2+\beta^2 \rightarrow \alpha+\beta = 1$ $\qquad \rightarrow (\alpha+\beta)^2 = \alpha^2+\beta^2+2\alpha\beta = 1$

$\rightarrow \alpha\beta = -1-m^2$ $\qquad \alpha^2+\beta^2 = 1-2\alpha\beta \rightarrow 1+2(1+m^2)$

$\rightarrow 2+2m^2 = \alpha^2+\beta^2 \xrightarrow[m=0]{\text{کمترین مقدار}} \alpha^2+\beta^2 = 3$ ۹

$x_s = \frac{3+(-5)}{2} = -1 \rightarrow y = k(x+1)^2+1$ $\qquad a = -1-d \Rightarrow b = -1+d$

$a^2+b^2 = (-1-d)^2 + (-1+d)^2 = 2(1+d^2) \rightarrow 2(1+d^2) = 5 \rightarrow d^2 = 3/2$ ۱۰

ریشه‌های معادله $y=0$ $\leftarrow$

$0 = k(d^2)+1 \rightarrow k = -2/3 \rightarrow y = -2/3\,(x+1)^2+1$

برخورد با محور y $\rightarrow x = 0 \rightarrow y = -\frac{2}{3}(1)+1 = \frac{1}{3}$