روژین فریدیان　　　دهم ریاضی B　　　تکلیف شماره 22

۱- $x^2-5x+2=0$　　$S=\frac{-b}{a}=5$　$P=\frac{c}{a}=2$　　$\alpha\beta=2\Rightarrow\alpha=\frac{2}{\beta}$ یا $\beta=\frac{2}{\alpha}$

$\frac{4\alpha+\beta^5}{5\beta^2}=\frac{4\times\frac{2}{\beta}+\beta^5}{5\beta^2}=\frac{4\alpha}{5\times\frac{4}{\alpha^2}}+\frac{\beta^3}{5}=\frac{\alpha^3+\beta^3}{5}$

$\frac{(\alpha+\beta)^3-3\alpha\beta(\alpha+\beta)}{5}=\frac{125-3\times2\times5}{5}=19$

۲- $\frac{-b}{2a}=\frac{3-1.5}{1\times2}=0.75$　　$\frac{-b}{2a}=\frac{1.5}{2}$　　$S=\frac{-b}{a}=\frac{1.5}{2}\times2=1.5$

۳- $|\alpha-\beta|=\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{4k^2-20}}{a=1}=\frac{4k}{3}$　　$3\sqrt{4k^2-20}=4k\Rightarrow3\sqrt{k^2-5}=2k\xRightarrow{(\ )^2}$

$9k^2-45=4k^2\Rightarrow5k^2=45\Rightarrow k^2=9$　　$[\frac{k^2}{2}]=[\frac{9}{2}]=[4.5]=4$

۴- $\frac{-b}{2a}=\frac{3-5}{2}\Rightarrow\frac{-b}{a}=-2=S$　　$S(-1,1)$　$\alpha^2+\beta^2=S^2-2P=4-2P=5\Rightarrow P=\frac{-1}{2}$

$y=a(x^2-Sx+P)=a(x^2+2x-\frac{1}{2})$　　$x=1\Rightarrow a(1-2-\frac{1}{2})=1\Rightarrow a=\frac{-2}{3}\Rightarrow y=\frac{2}{3}(x^2+2x-\frac{1}{2})$

$x=0\Rightarrow y=\frac{-2}{3}(0+0-\frac{1}{2})=\frac{1}{3}\Rightarrow c=\frac{1}{3}$

۵- $-x^2+5x+m=0$　　$S<9$　　$P>0\Rightarrow-m>0\Rightarrow m<0\Rightarrow\Delta>0$

$25+4m>0$　　$m>\frac{-25}{4}$

$P<\frac{81}{4}\Rightarrow-m<\frac{81}{4}$　　$m>\frac{-81}{4}$　$\Bigg\}\ \frac{-25}{4}<m<0\Rightarrow[-6,-1]$

۶- $y_{Max}=2$　　$m>0\Rightarrow\frac{-\Delta}{4a}=2\Rightarrow\frac{-144+20m^2-4m}{4m}=\frac{5m^2-m-36}{m}=2\Rightarrow$

$5m^2-3m-36=0$　　$(5m+12)(m-3)=0\Rightarrow m=\frac{-12}{5}$ ✗ یا $m=3$ ✓

$y=mx^2-12x+5m-1\Rightarrow y=3x^2-12x+15-1=3x^2-12x+14$

$\frac{-b}{2a}=\frac{12}{2\times3}=2\Rightarrow x=2$

۷- $\underbrace{\alpha , a}_{\times q}\underbrace{\ , \beta}_{\times q}$ $\quad a^2 = \alpha\beta = P \quad \alpha\beta = 2a-1 = a^2 \quad a^2 - 2a + 1 = 0$

$(a-1)^2 = 0 \Rightarrow a = 1$

۸- $x^4 - 7x^2 - 5 = 0 \Rightarrow t^2 - 7t - 5 = 0$

$t_1, t_2 = \frac{7 \pm \sqrt{69}}{2} \Rightarrow \frac{7+\sqrt{69}}{2} \ , \ \frac{7-\sqrt{69}}{2} < 0$ غ ق ق

$t = x^2 = \frac{7+\sqrt{69}}{2} \Rightarrow x^2 - \frac{7+\sqrt{69}}{2} = 0 \Rightarrow S = 0 \Rightarrow P = \frac{-(7+\sqrt{69})}{2}$

$2P^2 - 3SP + 2S = \frac{2(7+\sqrt{69})^2}{4} - 0 + 0 = \frac{49+69+14\sqrt{69}}{2} = 59 + 7\sqrt{69}$

۹- $y = kx^2 - 4x - 6 \Rightarrow S = \left(\frac{-b}{2a} , \frac{-\Delta}{4a}\right) \Rightarrow S = \left(\frac{2}{k} , \frac{-(16+24k)}{4k}\right) \Rightarrow S = \left(\frac{2}{k} , \frac{-4-6k}{k}\right)$

$-4\left(\frac{2}{k}\right) - 4 = \frac{-4-6k}{k} \Rightarrow \frac{-8-4k}{k} = \frac{-4-6k}{k} \Rightarrow \frac{-4+2k}{k} = 0 \Rightarrow 2k - 4 = 0 \Rightarrow k = 2$

$\frac{-4-6k}{k} = \frac{-4-12}{2} = -8$

۱۰- $\left.\begin{array}{l} y = -mx^2 + mx + 1 \\ y = -m - x \end{array}\right\} -mx^2 + mx + 1 = -m - x \Rightarrow -mx^2 + mx + 1 + m + x \Rightarrow$
$mx^2 + x(-m-1) - (m+1) = 0 \Rightarrow \Delta < 0$

$\left\{\begin{array}{l} (m+1)^2 + 4m(m+1) < 0 \\ (m+1)(m+1+4m) < 0 \end{array}\right. \Rightarrow (m+1)(5m+1) < 0 \qquad \begin{array}{ccccc} & -1 & & -\frac{1}{5} & \\ + & | & - & | & + \end{array} \Rightarrow m \in \left(-1, -\frac{1}{5}\right)$