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

۱

$\alpha = 3\beta \quad \alpha+\beta = \frac{a}{3} \quad \alpha\beta = \frac{4}{3} \rightarrow 3\beta+\beta = \frac{a}{3} \rightarrow 4\beta = \frac{a}{3} \rightarrow a = 12\beta$

$\rightarrow a = \pm 2 \rightarrow 12\left(\pm\frac{2}{3}\right) = \pm 8 \rightarrow 8-(-8) = 16$

$3\beta(\beta) = \frac{4}{3} \rightarrow \beta^2 = \frac{4}{9} \rightarrow \beta = \pm\frac{2}{3}$

۲

$\frac{1}{\sqrt{r_1}} + \frac{1}{\sqrt{r_2}} = 0 \rightarrow \frac{\sqrt{r_1}+\sqrt{r_2}}{\sqrt{r_1 r_2}} = \frac{\sqrt{r_1+r_2+2\sqrt{r_1 r_2}}}{\sqrt{r_1 r_2}} = \frac{\sqrt{S+\frac{1}{4}}}{\frac{1}{4}} = 0$

$\rightarrow P = \frac{1}{3^4}$

$\rightarrow \sqrt{S+\frac{1}{4}} = \frac{9}{6} \rightarrow S = \frac{m+14}{36} = \frac{12}{36} \Rightarrow \boxed{m = -1}$

$S+\frac{1}{4} = \frac{26}{36} \rightarrow S = \frac{12}{36}$ $\qquad P = \frac{2}{m} = -2$

۳

$x^2-(\alpha+\beta)x+\alpha\beta = x^2-(1)x+(-2) = x^2-x-2 \rightarrow (x^2-x-2)(ax-b) = ax^3-ax^2-2ax-bx^2+bx+2b$

$ax^3-(a+b)x^2-(2a-b)x+2b = 4x^3+12x^2-9x-2 \rightarrow a=4,\ b=-1$

$K = -(a+b) = -(4-1) = -3$

۴

$2(\alpha^2+\beta^2)+\alpha^2 = 12\sqrt{2}+18 \rightarrow 2(S^2-2P)+\alpha^2 = 12\sqrt{2}+18 \rightarrow 2(36-2a)+\alpha^2 = 12\sqrt{2}+18$

$\alpha^2-4a = 12\sqrt{2}+13 \rightarrow \alpha^2-4(\alpha\beta) = 12\sqrt{2}+12 \rightarrow \alpha(\alpha-4\beta) = 12\sqrt{2}+12$

$\xrightarrow{\beta=-6-\alpha} \alpha(\alpha-4(-6-\alpha)) = 12\sqrt{2}+12 \rightarrow \alpha(5\alpha+24) = 12\sqrt{2}+12 \rightarrow 5\alpha^2+24\alpha-12\sqrt{2}-12 = 0$

$\alpha = \frac{-24 \pm \sqrt{1296+240\sqrt{2}}}{10}$ $\qquad a = \alpha\beta = \alpha(-6-\alpha) = -\alpha^2-6\alpha \rightarrow -\left(\frac{-24+\sqrt{1296+240\sqrt{2}}}{10}\right)^2 + \frac{144+24\sqrt{1296+240\sqrt{2}}}{10}$

$\rightarrow \boxed{a = 1}$

۵

$x^4-7x^2-8 = 0$ $\qquad \frac{c}{a} < 0 \rightarrow$ دو ریشه مختلف العلامت $\Leftarrow$ x^2 دو ریشه مختلف العلامت که یکی از آنها منفی و شی قابل قبول است

x^2 ریشه مثبت $\longrightarrow \frac{7+\sqrt{49}}{2}$ $\qquad S = 0,\ P = -\left(\frac{7+\sqrt{49}}{2}\right)$

$\Rightarrow 2P^2-35P+25 = 2\left(\frac{-7-\sqrt{49}}{2}\right)^2$ $\leftarrow$ در نتیجه ریشه x برابر مثبت و منفی ریشه مثبت x^2 است $\leftarrow$ پس $S=0$ و $P = -($ریشه مثبت $x^2)$

$= 59+7\sqrt{49}$

۶

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

$\alpha'=2\alpha \;,\; \beta'=\frac{\beta}{2} \qquad \alpha=\frac{-3}{2} \;,\; \beta=2 \qquad \frac{b}{2}=\alpha\beta=-3 \rightarrow b=-6$

$\left[\frac{1(-6)}{3}\right]=-2$

۷

$20\beta^2+20\alpha^2+20\beta^2-20\beta=17 \qquad \alpha+\beta=1 \qquad \alpha\beta=\frac{-b}{a}$

$20[(\alpha+\beta)^2-2\alpha\beta]+20(\beta^2-\beta)=17 \qquad \frac{b}{a}=-\frac{1}{20}$

$2\left(1+2\frac{b}{a}\right)+20\frac{b}{a}=17$

$(\alpha-\beta)^2=(\alpha+\beta)^2-4\alpha\beta=1-\frac{1}{5}=\frac{4}{5} \rightarrow |\alpha-\beta|=\frac{2}{\sqrt{5}}=\frac{2\sqrt{5}}{5}$

۸

$x_1 x_2=a \qquad x_1+x_2=a+1 \rightarrow x_1=2x-1$

$x_1'+x_2'=4m+2 \qquad x_1' x_2'=2m(2m+2)=4m(m+1)$

$x_1'+x_2'=2a+1=2\times 2+1=10 \rightarrow 4m+2=10$

$\rightarrow 4m=8 \rightarrow m=2 \qquad x_1' x_2'=4\times 2\times 3=24$

$x_1'=4 \;,\; x_2'=6 \qquad \Rightarrow x_1' x_2'-x_1 x_2=24-3=21$

$x_2=2x+1$

$x_1+x_2=a+1 \rightarrow 4x=a+1$

$a=4x-1 \qquad x_1+x_2=a \rightarrow 4x^2-1=a$

$a=4x^2-1 \Rightarrow 4x-1=4x^2-1$

$\rightarrow 4x^2-4x=0 \rightarrow 4x(x-1)=0 \rightarrow x=1$

$a=4x-1=3$

۹

$\alpha+\beta=-1 \qquad \alpha\beta=-10m^2 \qquad \alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=(-1)^2-2(-10m^2)$

$=1+2+2m^2=3+2m^2 \xrightarrow[m\neq 0]{\text{کمترین مقدار}} 3+2(0)=3$

۱۰

$\frac{\alpha+\beta}{2}=\frac{-a+3}{2}=-1 \qquad \alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=5 \rightarrow \alpha\beta=-\frac{1}{2}$

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

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