نام و نام خانوادگی .نرگس اسلامی نژاد............ پاسخنامه تشریحی تکلیف شماره ...۲... کلاس ...ریاضی پنجشنبه دختر.....

۱

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

$\frac{4\alpha}{5\beta^2}\times\frac{\alpha^2}{\alpha^2}=\frac{4\alpha^3}{5\alpha^2\beta^2}=\frac{\cancel{4}(5\alpha^2-2\alpha)}{5\times\cancel{4}}=\frac{5\alpha^2-2\alpha}{5}+\frac{5\beta^2-2\beta}{5}=\frac{5\alpha^2+5\beta^2-2\alpha-2\beta}{5}$

$\alpha^2-5\alpha+2=0\to\alpha^2=5\alpha-2\to\alpha^3=5\alpha^2-2\alpha$

$\beta^2-5\beta+2=0\to\beta^2=5\beta-2\to\beta^3=5\beta^2-2\beta$

x^2-5x+2 $\quad\alpha\beta=\frac{2}{1}\to\alpha^2\beta^2=4$

$\alpha+\beta=5\xrightarrow{\text{توان ۲}}\alpha^2+\beta^2+2\alpha\beta=25\to\alpha^2+\beta^2=21$

$\frac{5(\overset{21}{\alpha^2+\beta^2})-2(\overset{5}{\alpha+\beta})}{5}=\frac{5(21-2)}{5}=\boxed{19}$

۲

$(-1.5,-4)$ ، $(3,-4)$ $\quad y=ax^2+bx+c$

$\left.\begin{array}{l}-4=2.25a-1.5b+c\\-4=9a+3b+c\end{array}\right\}\Rightarrow 2.25a-1.5b+\cancel{c}=9a+3b+\cancel{c}$

$\frac{-6.75a}{4.5}=\frac{4.5b}{4.5}\to-1.5a=b$

مجموع ریشه‌ها $=\frac{-b}{a}=\frac{+1.5a}{a}=\boxed{1.5}$

۳

اختلاف ریشه‌ها $=\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{4k^2-20}}{1}=\frac{4}{3}k\xrightarrow{\text{توان ۲}}\frac{4k^2-20}{1}=\frac{16k^2}{9}\to 9(4k^2-20)=16k^2$

$36k^2-180=16k^2$

$\Delta=b^2-4\underset{1\ \ 5}{ac}=4k^2-20$ $\qquad 20k^2=180\to k^2=9$

$\left[\frac{k^2}{2}\right]=\left[\frac{9}{2}\right]=[4.5]=4$

۴

$x_S=\frac{-5+3}{2}=\frac{-2}{2}=-1\qquad y=a(x+1)^2+1\to y=ax^2+2ax+a+1\to S=\frac{-b}{a}=\frac{-2a}{a}=-2$

$P=\frac{c}{a}=\frac{a+1}{a}$

$\alpha^2+\beta^2=S^2-2P\to 4-2\left(\frac{a+1}{a}\right)=4-\frac{2a+2}{a}=\frac{4a-2a-2}{a}=\frac{2a-2}{a}=5$

$5a=2a-2\to 3a=-2\to a=-\frac{2}{3}$

$y=-\frac{2}{3}(x+1)^2+1\xrightarrow{x=0}-\frac{2}{3}\times1+1=-\frac{2}{3}+\frac{3}{3}=\boxed{+\frac{1}{3}}$

۵

$-x^2+5x+m=0$

$\begin{array}{c|c|c}x_1 & & x_2\\\hline - & + & -\end{array}\to x_1<x_2<\frac{9}{2}$

$-\frac{81}{4}+\frac{45}{2}+m<0$

$\frac{-81+90+4m}{4}<0\to 9+4m<0\to 4m<-9\to m<-\frac{9}{4}=-2.25$

دو ریشه $\to\Delta>0\to b^2-4\underset{-1\ \ m}{ac}=25+4m>0\to 4m>-25\to m>-\frac{25}{4}=-6.25$

$-6.25\qquad -2.25$

$\{-6,-5,-4,-3\}$ ۴ تا

۶

$y = mx^2 - 12x + 5m - 1$

$-\dfrac{\Delta}{4a} = -\dfrac{(b^2 - 4ac)}{4a} = \dfrac{144 - 20m^2 + 4m}{-4m} = \dfrac{2}{1} \rightarrow 144 - 20m^2 + 4m = -8m \rightarrow 20m^2 - 12m - 144 = 0$

$5m^2 - 3m - 36 = 0$

$m^2 - 3m - 180 = 0$

$(m-15)(m+12) = 0$

$\boxed{m = \dfrac{15}{5} = 3}$ ✓ ← چون دهانه کمترین مقدار دارد ← $a > 0$

$\boxed{m = \dfrac{-12}{5}}$ ×

$y = 3x^2 - 12x + 14$

x رأس $=$ محور تقارن $= \dfrac{-b}{2a} = \dfrac{12}{6} = \boxed{2}$

۷

$x^2 + (2a+2)x + 2a - 1 = 0$

$S = \alpha + \beta = \dfrac{-b}{a} = \dfrac{-2a+2}{1} = -2a - 2$

$P = \alpha \times \beta = \dfrac{c}{a} = \dfrac{2a-1}{1} = 2a - 1$

$a^2 = \alpha\beta$

$a^2 = 2a - 1$

$a^2 - 2a + 1 = 0$

$(a-1)^2 = 0 \rightarrow \boxed{a = 1}$

۸

$x^2 = t \rightarrow t^2 - 7t - 5 = 0 \rightarrow \Delta = b^2 - 4ac = 49 + 20 = 69 \rightarrow \sqrt{69}$

$t = \dfrac{-b \pm \sqrt{\Delta}}{2a} = \dfrac{7 \pm \sqrt{69}}{2} \rightarrow x = \pm\sqrt{\dfrac{7 + \sqrt{69}}{2}} \rightarrow$ جمع $= S = 0$ ؛ ضرب $= -\dfrac{7 + \sqrt{69}}{2} = P$

$2P^2 - \cancel{3SP} + \cancel{2S} = 2 \times \left(-\dfrac{7 + \sqrt{69}}{2}\right)^2 = 2 \times \dfrac{49 + 69 + 14\sqrt{69}}{4} = \dfrac{118 + 14\sqrt{69}}{2} = \boxed{59 + 7\sqrt{69}}$

۹

$y = kx^2 - 4x - 6$ ؛ x رأس $= \dfrac{-b}{2a} = \dfrac{4}{2k} = \dfrac{2}{k}$

y رأس $= k \times \dfrac{4}{k^2} - 4 \times \dfrac{2}{k} - 6 = \dfrac{4}{k} - \dfrac{8}{k} - 6 = \dfrac{4 - 8 - 6k}{k} = \dfrac{-4}{k} - 6$

$\left(\dfrac{2}{k}, -\dfrac{4}{k} - 6\right) \rightarrow y = -4x - k$

$-\dfrac{4}{k} - 6 = \dfrac{-8}{k} - k \rightarrow \dfrac{4}{k} = \dfrac{2}{1} \rightarrow 2k = 4 \rightarrow \boxed{k = 2}$

y رأس $= -\dfrac{4}{k} - 6 = -\dfrac{4}{2} - 6 = -2 - 6 = \boxed{-8}$

۱۰

$-m - x = -mx^2 + mx + 1 \rightarrow mx^2 - mx - 1 - m - x = 0 \rightarrow mx^2 - (m+1)x - m - 1 = 0$

$\Delta = b^2 - 4ac = (-(m+1))^2 - 4 \times m \times (-m-1) < 0$

$m^2 + 1 + 2m + 4m^2 + 4m = 5m^2 + 6m + 1 < 0 \rightarrow$

$m^2 + 6m + 5 < 0$

$(m+1)(m+5) < 0$

$m = \dfrac{-1}{5}$ ، $-\dfrac{1}{5}$ ، $-\dfrac{5}{5} = -1$

$5\left(m + \dfrac{1}{5}\right)(m+1)$

$(5m+1)(m+1) < 0$

	-1		$-\frac{1}{5}$ (-0.2)	
$+$	0	$-$	0	$+$

هیچ عدد صحیحی ندارد