آروین شفائی راد دهم کاپیتان

$\boxed{19}$ / 1

$\alpha+\beta=5 \Rightarrow \alpha=5-\beta$

$\alpha\beta=2$

$\beta^2-5\beta+2 \Rightarrow \beta^2=5\beta-2$

$\beta^5=\beta^2.\beta^3=(5\beta-2)b(5\beta-2)=b(5b-2)^2$

$\frac{4a+\beta(5\beta-2)^2}{5(5\beta-2)}=\frac{4(5-\beta)+\beta(5\beta-2)^2}{5(5\beta-2)}=\frac{475b-190}{25b-10}=\frac{19(\cancel{25b-10})}{(\cancel{25b-10})}=19$

$20+\beta(5b-2)^2=20+25\beta^3-20\beta^2=20+125\beta^2-50\beta-20\beta^2=$

$20+105\beta^2-50\beta=20+525b-210-50b=475b-190$

$\boxed{1/5}$ / 2

چون هم مرز هستند و نمودار سهمی است

$\frac{3-(-1/5)}{2}=2/25$

$\Rightarrow min \; 0/75 \Rightarrow \frac{-b}{2a}=0/75$

$\boxed{S=\frac{-b}{a}=\frac{-b}{2a}\times 2=1/5}$

$\boxed{4}$ / 3

$\frac{\sqrt{\Delta}}{a}=\frac{\sqrt{4k^2-20}}{1}=\sqrt{4k^2-20}=\frac{4}{3}k$

$4k^2-20=\frac{16}{9}k^2 \Rightarrow \frac{20}{9}k^2-\frac{180}{9}=0 \Rightarrow k^2=9 \Rightarrow k=\pm 3$

$\Rightarrow \left[\frac{9}{2}\right]=\boxed{4}$

۴) ۱ نمره

$(-1, 1)$ مختصات رأس $\frac{3+0.5}{2}$

$\alpha^2+\beta^2=5$

$\underbrace{(\alpha+\beta)^2}_{4}-2\alpha\beta=5$

$y=a(x-h)^2+k \to y=a(x+1)^2+1$

$y=0 \to 0=a(x+1)^2+1 \Rightarrow a(x+1)^2=-1 \Rightarrow (x+1)^2=\frac{-1}{a}$

$\alpha=-1+\sqrt{\frac{-1}{a}}$, $\beta=-1-\sqrt{\frac{-1}{a}}$ $\Rightarrow \alpha+\beta=-2$, $2\alpha\beta=-1$

$\alpha\beta=1+\frac{1}{a}=-\frac{1}{2}$, $\alpha\beta=-\frac{1}{2}$

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

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

$\boxed{\text{نقطه } (0, \frac{1}{3})}$

۵) ۲ نمره

$\alpha+\beta=5$ $\quad -(x^2-5x-m)$

$P=-m$

$\alpha>\beta \Rightarrow \alpha<\frac{9}{2}$

$\beta=5-\alpha>5-4.5=0.5$ $\Big\} \Rightarrow 0.5<\alpha,\beta<4.5$

$\Rightarrow m=-P \to m<-(4.5\times0.5)=-2.25$

$\to m>-(2.5\times2.5)=-6.25$ $\Big\} \Rightarrow -6.25<m<-2.25$

$\boxed{-6, -5, -4, -3}$

۴ عدد

۶)

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

$\frac{-b}{2a}=\frac{12}{2m}=\frac{6}{m} \Rightarrow m\left(\frac{36}{m^2}\right)-\frac{72}{m}+\frac{5m^2-m}{m}=\frac{2m}{m}$

$\frac{36}{m}-\frac{72}{m}+\frac{5m^2-m}{m}=5m^2-3m-36=0$

$\Rightarrow m^2-3m-180=(m-15)(m+12)$ $\Big\langle$ $m=3$, $\frac{-12}{5}$

$\frac{6}{3}$ یا $\frac{6}{-2.4}$ $\longrightarrow$ $\boxed{-2.5 \text{ یا } 2}$

$\frac{180}{52} = \frac{90}{26} = \frac{45}{13}$ (7

α, a, β

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

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

(8

$x^2 = t$

$\Rightarrow t^2 - 7t - 5 \rightarrow t = \frac{7+\sqrt{69}}{2}$ ✓

$\rightarrow \frac{7-\sqrt{69}}{2}$ ✗

$x^2 = \frac{7+\sqrt{69}}{2}$

$x = \pm\sqrt{\frac{7+\sqrt{69}}{2}} \Rightarrow S=0$

$P = \sqrt{t}\times(-\sqrt{t}) = -t \Rightarrow -t = \frac{-7-\sqrt{69}}{2} \Rightarrow P = \frac{7+\sqrt{69}}{2}$

$2P^2 \underbrace{-3SP+2S}_{S=0} = 2P^2 = 2\left(\frac{49+14\sqrt{69}+69}{4}\right) = \frac{118+14\sqrt{69}}{2} = 59+7\sqrt{69}$

(9

$y = kx^2 - 4x - 6 \Rightarrow y = -4x - 4 \rightarrow \frac{-b}{2a} = \frac{4}{2k} = \frac{2}{k}$

$y_s = k\left(\frac{2}{k}\right)^2 - 4\left(\frac{2}{k}\right) - 6 = \frac{-4}{k} - 6$

$y_2 = -4x - 4 = -4\left(\frac{2}{k}\right) - 4 = \frac{-8}{k} - 4 \xrightarrow{y_2 = y_s} \frac{-8}{k} - 4 = -6 - \frac{4}{k}$

$\Rightarrow \frac{-4}{k} = -2 \Rightarrow k = 2$

$y_1 = \frac{-4}{k} - 6 = \boxed{-8}$

۱۰)

$-mx^2 + mx + 1 = -m - x$

$-mx^2 + mx + m + x + 1 = 0$

$\Rightarrow -mx^2 + (m+1)x + m + 1 = 0 \xrightarrow{\Delta<0} m^2 + 2m + 1 + 4m^2 + 4m = 5m^2 + 6m + 1 < 0$

$\Rightarrow 5m^2 + 6m + 1 < 0$

$(m+1)(5m+1) \Rightarrow m \begin{cases} -\frac{1}{5} \\ -1 \end{cases} \Rightarrow -1 < m < -\frac{1}{5}$

در حدود m عدد صحیح نیست.

	-1		$-\frac{1}{5}$	
$+$	0	$-$	0	$+$

$m \in \left(-1, -\frac{1}{5}\right)$