سارا سامانی تکلیف شماره ۱۳ یازدهم دفتر A

۱-

$y=(a-1)x^۲+x+۳ \longrightarrow -\frac{b}{a}=۲ \longrightarrow \frac{-۱}{۲a-۲}=۲ \longrightarrow ۴a-۴=-۱$

$۴a=۳ \longrightarrow a=\frac{۳}{۴} \longrightarrow y=-\frac{۱}{۴}x^۲+x+۳$

$۱-۴(۳)(-\frac{۱}{۴})=۴$

$\frac{-۱\pm ۲}{-\frac{۱}{۲}}$ ↗ ۶ ⟵ + طول ، ↘ -۲

۲-

$f(x)=mx^۲-۵x+m$

	$x_۱$		$x_۲$	
$-$		$+$		$-$

$\longrightarrow m<۰$

$\Delta>۰ \longrightarrow ۲۵-۴(m)(m) \Rightarrow -۴m^۲+۲۵>۰ \longrightarrow ۴m^۲<۲۵ \longrightarrow$

$۲m<۵ \longrightarrow m<\frac{۵}{۲}$

$\Rightarrow m\in(۰,\frac{۵}{۲})$

۳-

$\frac{۳+\sqrt{۵}}{۲}\cdot\frac{۳-\sqrt{۵}}{۳}=\frac{۹-۵}{۳}=\frac{۴}{۹}=P$

$\frac{۳+\cancel{\sqrt{۵}}+۳-\cancel{\sqrt{۵}}}{۳}=\frac{۶}{۳} \Rightarrow S=۲$

$\left.\begin{matrix}\\ \\ \end{matrix}\right\}\ x^۲-Sx+P=۰$

$x^۲-۲x+\frac{۴}{۹}=۰=$

$۹x^۲-۱۸x+۴=۰$

۴-

$S=-\frac{b}{a}=۴\ ,\ P=\frac{c}{a}=\frac{m+۲}{۲} \longrightarrow \alpha^۲+\beta^۲=(\alpha+\beta)^۲-۲\alpha\beta$

$\beta=۴-\alpha \longrightarrow ۳\alpha^۲+(۴-\alpha)^۲=۱۲ \longrightarrow ۳\alpha^۲+۱۶-۸\alpha+\alpha^۲=۱۲$

$۴\alpha^۲-۸\alpha+۴=۰ \longrightarrow \alpha^۲-۲\alpha+۱=۰ \longrightarrow (\alpha-۱)^۲=۰ \longrightarrow \alpha=۱\ ,\ \beta=۳$

$\alpha\beta=۳ \Rightarrow \frac{m+۲}{۲}=۳ \Rightarrow m+۲=۶ \longrightarrow m=۴$

۵-

$S\,\begin{vmatrix}2\\9\end{vmatrix} \quad \begin{vmatrix}0\\5\end{vmatrix} \to y=a(x-h)^2+k \to y=a(x-2)^2+9 \xrightarrow{\begin{vmatrix}0\\5\end{vmatrix}}$

$5=a(\underbrace{\cancel{0-2}}_{4})^2+9 \to 4a+9=5 \to 4a=-4 \to a=-1 \to y=-(x-2)^2+9$

$\boxed{y=-x^2+4x+5}$ $\quad 16-4(-1)(5)=36 \quad \frac{-4\pm 6}{-2}$ $\nearrow -1$, $\searrow 5$

بالای محور x ها $\to (-1,5)$

۶-

$\alpha x^2-7x+9\beta$

$S=\frac{7}{\alpha} \quad P=\frac{9\beta}{\alpha} \to \alpha\beta=\frac{9\beta}{\alpha} \to \alpha^2\cancel{\beta}=9\cancel{\beta} \to \alpha^2=9 \to \alpha=\pm 3$

$\xrightarrow{\alpha=+3} 3x^2-7x+9\beta=0 \to 27-21+9\beta=0 \to 9\beta=-6$ غق

$\xrightarrow{\alpha=-3} -3x^2-7x+9\beta=0 \to -27+21+9\beta=0 \to 9\beta=6 \to \beta=\frac{2}{3}$

$\boxed{\frac{1}{\alpha}+\frac{1}{\beta}=-\frac{1}{3}+\frac{3}{2}=\frac{7}{6}}$

۷-

$\alpha+\beta=-m \Rightarrow \beta=-m-\alpha \to \alpha^2-m(-m-\alpha)=8 \Rightarrow$

$\alpha^2+m^2+m\alpha=8$

$\alpha^2+m\alpha-2m=0 \Rightarrow \alpha^2=-m\alpha+2m$

$(-m\alpha+2m)+m^2+m\alpha=8 \Rightarrow m^2+2m-8=0$

$m=2 \to \boxed{\alpha+\beta=-2}$

$m=-4 \to \alpha+\beta=4$ غق

$\max \longrightarrow m<0 \qquad -\dfrac{b}{2a} = -\dfrac{4}{2m} = -\dfrac{2}{m} \Longrightarrow$ -8

$m\left(\dfrac{4}{m^2}\right) + 4\left(\dfrac{-2}{m}\right) + \dfrac{m}{2} + 7 = \dfrac{4}{m} - \dfrac{8}{m} + \dfrac{m}{2} + 7 = -\dfrac{4}{m} + \dfrac{m}{2} + 7 = 9 \Rightarrow$

$\dfrac{m^2 - 4m - 8}{2m} = 0 \Longrightarrow m \to \ldots$

$\searrow m = -2 \longrightarrow -2x^2 + 4x + 6 = 0 \longrightarrow x^2 - 2x - 3 = 0$

$(x-3)(x+1) = 0 \Longrightarrow \boxed{K = 3}$

$S\begin{vmatrix} 2 \\ 6 \end{vmatrix} , \begin{vmatrix} 0 \\ 4 \end{vmatrix} \longrightarrow y = a(x-h)^2 + k \longrightarrow y = a(x-2)^2 + 6 \xrightarrow{\left|\begin{smallmatrix} 0 \\ 4 \end{smallmatrix}\right.}$ -9

$4 = a(0-2)^2 + 6 \longrightarrow 4a = -2 \longrightarrow a = -\dfrac{1}{2} \longrightarrow y = -\dfrac{x^2}{2} + 2x + 4 \longrightarrow$

$\dfrac{1}{\alpha} + \dfrac{1}{\beta} = \dfrac{\alpha + \beta}{\alpha\beta} = \dfrac{4}{-8} = \boxed{-\dfrac{1}{2}}$

$S = 4$

$P = -8$

$x^2 - (4a+4)x + (3a^2 + 6a + 3) = 0 \longrightarrow 4 - 8a - 8 + 3a^2 + 6a + 3 = 0$ -10 $\longrightarrow$

$3a^2 - 2a - 1 = 0 \qquad 4 - 4(-1)(3) = 16 \qquad \dfrac{2 \pm 4}{6} \begin{matrix} \nearrow 1 \\ \searrow -\frac{1}{3} \end{matrix}$

$\xrightarrow{a=1} x^2 - 8x + 12 = 0 \longrightarrow \Delta = 16 \longrightarrow \dfrac{8 \pm 4}{2} \begin{matrix} \nearrow 6 \\ \searrow 2 \end{matrix}$

$\xrightarrow{a = -\frac{1}{3}} x^2 - \dfrac{8}{3}x + \dfrac{4}{3} = 0 \longrightarrow \Delta = \dfrac{16}{9} \longrightarrow \dfrac{\frac{8}{3} \pm \frac{4}{3}}{2} \begin{matrix} \nearrow x = \frac{2}{3} \\ \searrow x = 2 \end{matrix}$