الیسا ملکی - تکلیف شماره ۱۳ ۱۹٫۵

۱-

$\frac{-1}{2(a-1)} = 2 \quad 4a-4=-1 \quad a=\frac{3}{4}$ ۲

$y = -\frac{1}{4}x^2 + x + 3 = 0 \quad x^2-4x-12=0 \quad (x-6)(x+2)=0 \quad \boxed{x=6}$

۲-

$\Delta>0 \quad 25-4m^2>0 \quad m^2<\frac{25}{4} \quad -\frac{5}{2}<m<\frac{5}{2} \Big\} \xrightarrow{\cap} -\frac{5}{2}<m<0$ ۲

$m<0$

۳-

$S=2$ ۲

$P=\frac{9-5}{9}=\frac{4}{9} \quad \rightarrow x^2-2x+\frac{4}{9} \rightarrow 9x^2-18x+4$

۴-

$\underset{\sim}{2\alpha^2}+\alpha^2+\beta^2 = 8\alpha-m-\cancel{2}+16-m-\cancel{2}=16$ ۲

$8\alpha-m-2 \qquad 8\alpha-2m=0 \quad 4\alpha=m \quad \alpha=\frac{m}{4}$

$S=4 \qquad \beta=4-\alpha=4-\frac{m}{4}=\frac{16-m}{4}$

$P=\frac{m+2}{2} \rightarrow \alpha\beta = \frac{m}{4}\times\frac{16-m}{\cancel{4}} = \frac{m+2}{\cancel{2}} \qquad 16m-m^2=8m+16$

$m^2-8m+16=0 \quad (m-4)^2=0 \quad \boxed{m=4}$

۵-

$y=a(x-2)^2+9 \xrightarrow{x=0} 4a+9=5 \quad a=-1 \rightarrow y=-x^2+4x+5$ ۲

$-x^2+4x+5>0 \quad x^2-4x-5<0 \quad (x-5)(x+1)<0$

	-1		5	
$+$		$-$		$+$

$x\in(-1,5)$

۶-

$\alpha x^2-7x+9\beta=0 \qquad \alpha+\beta=\frac{7}{\alpha} \qquad \alpha\beta=\frac{9\beta}{\alpha} \qquad \alpha^2=9 \qquad \alpha=\pm3$

$3+\beta=\frac{7}{3} \qquad \beta=-\frac{2}{3}$ ۲

$-3+\beta=-\frac{7}{3} \qquad \beta=\frac{2}{3}$ ✓ $, \ \alpha=-3 \rightarrow -\frac{1}{3}+\frac{3}{2}=\frac{-2+9}{6}=\frac{7}{6}$

۷-

$x^2+mx-2m=0 \qquad P=-2m \quad S=-m=\alpha+\beta$

$\alpha^2+(\alpha+\beta)\beta=8 \qquad \alpha^2+\beta^2+\alpha\beta=8 \qquad m^2+4m-2m=8 \qquad m^2+2m-8=0$

$(m+4)(m-2)=0 \qquad m=-4 \rightarrow x^2-4x+8 \rightarrow \Delta<0$ غ ق ق ۲

$m=2 \rightarrow x^2+2x-4$ ✓ $\boxed{S=-m=-2}$

۸-

$$y_{min} = \frac{-\Delta}{4a} = \frac{-(16 - 4m(\frac{m}{2} + 7))}{4m} = \frac{-(4 - m(\frac{m}{2} + 7))}{m} = 8$$

۱/۵

$-4 + m(\frac{m}{2} + 7) = 8m \qquad -4 + \frac{m^2}{2} + 7m = 8m$

$\frac{m^2}{2} - m - 4 = 0 \to m^2 - 2m - 8 = 0 \qquad (m-4)(m+2) = 0$

$m = 4$ غ ق ق $\qquad m = -2$ ق ق

$y = -2x^2 + 4x + 6 = 0 \qquad x^2 - 2x - 3 = 0 \qquad (x-3)(x+1) = 0$

$x = \cancel{\frac{3}{2}}$ ✓ ۳ ✓

$x = -\cancel{\frac{1}{2}}$ غ ق ق $h > 0$ -1 ✗

۹-

$y = a(x-2)^2 + 6 \xrightarrow{x=0} 4a + 6 = 4 \qquad a = -\frac{1}{2}$

$-\frac{1}{2}(x^2 - 4x + 4) + 6 \qquad -\frac{x^2}{2} + 2x - 2 + 6 = 0 \xrightarrow{\times(-2)} x^2 - 4x - 8 = 0$

۳

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

۱۰-

$\xrightarrow{x=2} 4 - 8a - 8 + 3a^2 + 6a + 3 = 0 \qquad 3a^2 - 2a - 1 = 0$

$a^2 - 2a - 3 = 0 \qquad (a - \frac{3}{3})(3a + 1) = (a-1)(3a+1)$

$a = 1 \qquad a = -\frac{1}{3}$

۲

$\xrightarrow{a=1} x^2 - 8x + 12 = 0 \qquad (x-2)(x-6) = 0$

$x = 2 \qquad \boxed{x = 6}$

$\xrightarrow{a=-\frac{1}{3}} x^2 - \frac{8}{3}x + \frac{4}{3} = 0 \qquad 3x^2 - 8x + 4 = 0$

$x^2 - 8x + 12 = 0$

$(x-2)(x-6) = 0 \qquad \boxed{x = \frac{2}{3}}$

یا $x = 2$