تکلیف شماره ۱۴ (۲۰) هندسه تحلیلی یازدهم دختران

(۱)

$\frac{-b}{2a} = 2 \rightarrow \frac{-1}{2a-2} = 2 \rightarrow 8a - 8 = -1 \rightarrow 8a = 7 \rightarrow a = \frac{7}{8}$

(۲)

$\frac{-1}{8}x^2 + x + 7 = 0 \rightarrow x^2 - 8x - 12 = 0 \rightarrow (x-6)(x+2) = 0$

چون $x = -2$ قرق

$\boxed{x = 6}$

(۳)

$m < 0$ ①

$\Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 25 - 4m^2 > 0 \rightarrow 4m^2 < 25 \rightarrow m^2 < \frac{25}{4}$

$\rightarrow \frac{-5}{2} < m < \frac{5}{2}$ ②

① و ② $\Rightarrow \boxed{\frac{-5}{2} < m < 0}$

(۴)

$S = \frac{7+\sqrt{5}}{7} + \frac{7-\sqrt{5}}{7} = 2$

$P = \frac{7+\sqrt{5}}{7} \times \frac{7-\sqrt{5}}{7} = \frac{49-5}{49} = \frac{4}{9}$

$x^2 - Sx + P = 0 \rightarrow x^2 - 2x + \frac{4}{9} = 0 \rightarrow \boxed{9x^2 - 18x + 4 = 0}$

(۵)

$S = 4 \qquad \beta = 4 - \alpha$

$2\alpha^2 + (4-\alpha)^2 = 12$

$2\alpha^2 + 16 + \alpha^2 - 8\alpha = 12 \rightarrow 4\alpha^2 - 8\alpha + 4 = 0 \rightarrow \alpha^2 - 2\alpha + 1 = 0$

$\rightarrow (\alpha - 1)^2 = 0 \rightarrow \alpha = 1 \qquad 2 - 8 + m - 2 = 0 \rightarrow \boxed{m = 8}$

(۶)

$y = a(x-2)^2 + 9$

$4a + 9 = 0$

$a = -1$

$-(x-2)^2 + 9 > 0$

$(x-2)^2 - 9 < 0$

$x^2 + 4 - 4x - 9 < 0 \rightarrow x^2 - 4x - 5 < 0$

$\rightarrow (x-5)(x+1) < 0$

	-1		5	
	$+$	0	$-$	0

$\boxed{(-1, 5)}$ ←

(٦)

$P = \alpha\beta = \frac{9\beta}{\alpha}$ ⊗ $\alpha^2\beta = 9\beta \rightarrow \alpha^2 = 9 \rightarrow \alpha = \pm 3$

$\alpha = 3 \rightarrow \frac{7}{3} = 3 + \beta \rightarrow \beta = \frac{-2}{3}$ غ ق ق

$\alpha = -3 \rightarrow \frac{-7}{3} = -3 + \beta \rightarrow \beta = \frac{2}{3}, \alpha = -3$

$S = \frac{7}{\alpha}$

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

(٧)

$\beta^2 + m\beta - 2m = 0 \rightarrow \beta^2 - 2m = -m\beta$

$\alpha^2 - m\beta = 8 \rightarrow \underbrace{\alpha^2 + \beta^2}_{S^2 - 2P} - 2m = 8 \Rightarrow m^2 + 4m - 2m - 8 = 0$

$\rightarrow m^2 + 2m - 8 = 0 \rightarrow (m+4)(m-2) = 0$ ⟨ $m = -4$, $m = 2$

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

$m = 2 \rightarrow x^2 + 2x - 4 = 0 \rightarrow S = \frac{-b}{a} = -2$

(٨)

$m < 0$

$\frac{-\Delta}{4a} = 8 \rightarrow 32a = -\Delta \rightarrow -(16 - 4(m)(\frac{m}{2} + 7)) = 32m$

$\rightarrow -16 + 2m^2 + 28m = 32m$

$\rightarrow 2m^2 - 4m - 16 = 0$

$\rightarrow m^2 - 2m - 8 = 0 \rightarrow (m-4)(m+2) = 0 \rightarrow m = 4$ غ ق ق

$m = -2$ ✓

$-2x^2 + 4x + 6 = 0$

$x^2 - 2x - 3 = 0 \rightarrow (x-3)(x+1) = 0 \rightarrow x = 3 \rightarrow y = 14$

$x = -1$ غ ق ق

(9)

$y = a(x-2)^2 + 4$

$4a + 4 = 3 \longrightarrow a = \frac{-1}{2}$

(5)

$\frac{-1}{2}(x^2 - 4x + 4) + 4 \Longrightarrow \frac{-1}{2}x^2 + 2x - 2 + 4 \rightarrow \frac{-1}{2}x^2 + 2x + 3$

$\rightarrow -x^2 + 4x + 8 \qquad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha+\beta}{\alpha\beta} = \frac{5}{5} = \frac{4}{-8} = \boxed{\frac{-1}{2}}$

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(10)

$4a + 4 = 2 + 3\beta$

$3a^2 + 6a + c = 2\beta$

$ca^2 + 6a + c = 8a + 4$

(5)

$3a^2 - 2a - 1 = 0 \rightarrow ca^2 - 2a - c = 0 \rightarrow (a-c)(a+1) = 0$

$\rightarrow a = \frac{-1}{c} \rightarrow x^2 - \frac{8}{3}x + \frac{4}{3} = 0 \rightarrow 3x^2 - 8x + 4 = 0 \rightarrow x = 2, \; x = \frac{2}{3}$

$\rightarrow a = \frac{c}{c} = 1 \rightarrow x^2 - 8x + 12 = 0 \rightarrow (x-2)(x-6) = 0 \rightarrow x = 6, \; x = 2$

$\boxed{x = 6, \frac{2}{3}}$