تکلیف ۲۳ — دهم دختر B — الیا یادگاری

۱)

$y=ax^2+bx+c$ رأس سهمی $=(-1,9)$ $\quad y=a(x+1)^2+9 \xrightarrow[(3,1)]{\text{جایگذاری}} a(4)^2+9=1$

$16a=-8 \to a=-\frac{1}{2} \qquad y=-\frac{1}{2}(x+1)^2+9$

$-\frac{1}{2}x^2-\frac{1}{2}x+9 \to y=-\frac{1}{2}x^2-x+8.5$

۲)

$2x^2+mx+m+6=0 \to \Delta>0 \qquad m^2-4(m+6)(2)=m^2-8m-48>0$

$(m-12)(m+4)>0$ $\quad$ (-4, 12: $+\ -\ +$) $\to \boxed{(-\infty,-4)\cup(12,+\infty)}$ (1)

$P>0 \to \frac{m+6}{2}>0 \to m+6>0,\ \boxed{m>-6}$ (2) $\qquad S>0 \to \frac{-m}{2}>0 \to \frac{m}{2}<0,\ \boxed{m<0}$ (3)

(1)(2)(3) $\to (-6,-4)$

۳)

$3x^2+(2m-1)x+2-m=0 \qquad S=\frac{1}{P} \to \frac{-2m+1}{3}=\frac{3}{2-m}$

$P=\frac{2-m}{3} \qquad 9=2m^2-5m+2 \qquad 2m^2-5m-7=0 \qquad m=\frac{5\pm\sqrt{81}}{4} \to \frac{14}{4}=\frac{7}{2}$, $\ -1$ ✗

۴)

$x^2-x-4=0 \to x_1+x_2=1,\quad x_1x_2=-4$

$(x_1+x_2)^2 \to x_1^2+x_2^2+2x_1x_2 \to x_1^2+x_2^2=9$

$P=(x_2^3+\frac{1}{x_1})(x_1^3+\frac{1}{x_2}) \xrightarrow{-4} \underbrace{(x_1x_2)^3}_{-4}+\underbrace{x_2^2+x_1^2}_{9}+\underbrace{\frac{1}{x_1x_2}}_{-4}=-55.25$

$S=x_2^3+\frac{1}{x_1}+x_1^3+\frac{1}{x_2} \to \underbrace{x_2^3+x_1^3}_{(x_1+x_2)^3-3x_1x_2(x_1+x_2)}+\frac{x_2+x_1}{\underbrace{x_1x_2}_{-4}} \to 12.75$

$x^2-12.75x-55.25 \xrightarrow{\times 4} 4x^2-51x-221$

۵)

$x\sqrt[3]{x}+\cancel{1}+\cancel{\sqrt[3]{x^2}}-\cancel{\sqrt[3]{x^2}}-\frac{1}{\sqrt[3]{x^2}}-\cancel{1}=2\sqrt[3]{x} \to x\sqrt[3]{x}-\frac{1}{\sqrt[3]{x^2}}=2\sqrt[3]{x}$

$x\sqrt[3]{x}-\frac{1}{\sqrt[3]{x^2}}-2\sqrt[3]{x}=0 \xrightarrow{\times\sqrt[3]{x^2}} x^2-1-2x=0 \qquad x=\frac{2\pm\sqrt{8}}{2}$

$x_1=\frac{2+2\sqrt{2}}{2} \to 1+\sqrt{2}$

$x_2=\frac{2-2\sqrt{2}}{2} \to 1-\sqrt{2}$

جمع: $1+\cancel{\sqrt{2}}+1-\cancel{\sqrt{2}}=2$

6) $3x^2 - ax + 4 = 0 \qquad x_1 = 3x_2 \qquad 3x_2 \times x_2 = 3x_2^2 = \frac{4}{3}$

$x_2^2 = \frac{4}{9} \to x_2 = \frac{2}{3} , \frac{-2}{3}$

$x_1 = 2 \qquad x_1 = -2$

$2 + \frac{2}{3} = \frac{a}{3} \qquad -2 - \frac{2}{3} = \frac{a}{3}$

$a = 8 \qquad a = -8$

$8 - (-8) = 16$

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7) $y = ax^2 + (3+2a)x \qquad a > 0 \ (1) \qquad P = 0$ یکی از ریشه‌ها صفر

$S > 0 \to \frac{-3-2a}{a} > 0 \to (-\frac{3}{2}, 0) \ (2)$

+	−
0	0
✓	×

$-\frac{3}{2} \quad 0$: $- \ + \ -$

$1, 2 \xrightarrow{\cap} \emptyset$ همواره از ناحیه سوم می‌گذرد

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8) $\frac{-b}{2a} = \frac{2}{-2} \ , \ \frac{-a}{2} \to a = 2 \qquad y = 1 \to x^2 + 2x + 1 - b$

$x^2 + 2x - 3 \to b = 4 \qquad ab \to 2 \times 4 = 8$

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9) $2ax^2 + ax - 6 = 0 \to x_1 , x_2 \to x_1 + x_2 = \frac{-a}{2a} = \frac{-1}{2}$

$2x^2 - ax + b \to (x_1 + 0/5) , (x_2 + 0/5) \to S = (\underbrace{x_1 + x_2}_{-\frac{1}{2}} + 1) = \frac{1}{2} = \frac{a}{2}$

$a = 1$

$2x^2 + x - 6 = 0 \to \frac{-1 \pm \sqrt{49}}{4} \to \frac{3}{2} , -2 \to 2 , -1/5$

$P = -3 \to \frac{b}{2} \to b = -6$

$\left[\frac{ab}{4}\right] = \left[\frac{-6}{4}\right] = [-1/5] = -2$

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10) ریشه مشترک $= x$ $\qquad$ ریشه غیرمشترک $= x_2 , x_3$

$x^2 + 2x - 3m = 0$

$x \times x_2 = -3m \to x_2 = \frac{-3m}{x}$

$x^2 + 6x + m = x^2 + 2x - 3m$

$4x = -4m$

$x = -m$

$x^2 + 6x + m = 0$

$x \times x_3 = m \to x_3 = \frac{m}{x}$

$x_2 - x_3 = \frac{-3m}{x} - \frac{m}{x} = \frac{-4m}{x} = 4$