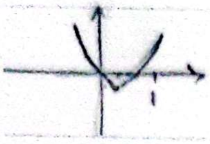
دهم دفتر A　　　　حلما عامری　　　　پاسخنامه تکلیف شماره ۲۵

۱) الف:

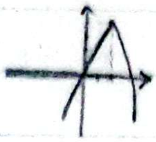
$y = 3x^2 - 2x$ (min) $\quad x_s = \frac{-b}{2a} = \frac{2}{6} = \frac{1}{3} \quad y_s = \frac{4ac-b^2}{4a} = \frac{-4}{12} = \frac{-1}{3}$



از ناحیه چهارم نمی‌گذرد

ب:

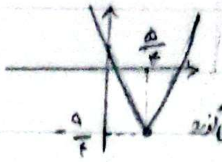
$y = -x^2 + 4x$ (max) $\quad x_s = \frac{-4}{-2} = 2 \quad y_s = -4+8=4$



از ناحیه دوم نمی‌گذرد

۲) الف:

$y = 2x^2 - 5x + 2$ (min) $\quad x_s = \frac{5}{4} \quad y_s = \frac{16-25}{8} = \frac{-9}{8}$



از ناحیه ۱، ۲، ۴ می‌گذرد

ب:

$y = -x^2 + 4x - 1$ (max) $\to x_s = \frac{-4}{-2} = 2 \quad y_s = -4+8-1=3$

از ناحیه ۱، ۳، ۴ می‌گذرد

۳) الف: $\dfrac{\frac{-b}{a}}{\frac{\sqrt{\Delta}}{|a|}} = \dfrac{\frac{1}{1}}{\frac{\sqrt{1+12}}{1}} = \dfrac{1}{\sqrt{13}}$

ب: $S^2 - 2P = (-\frac{b}{a})^2 - 2(\frac{c}{a}) = (\frac{1}{1})^2 - 2(\frac{-3}{1}) = 7$

ج: $\alpha^3 + \beta^3 = S^3 - 3SP = (\frac{1}{1})^3 - 3(1)(-3) = 10$

د: $\alpha^3 - \beta^3 = (\alpha-\beta)(\alpha^2+\beta^2+\alpha\beta) = (\sqrt{13})(7-3) = 4\sqrt{13}$

۴) $x=2 \quad \Delta = 0 \quad \Delta < 0 \to a^2 - 4a < 0 \to a(a-4) < 0 \to 0 < a < 4$

یا $2^2 - 2a + a = 0 \to a = 4 \Rightarrow a \in (0,4]$

۵) $\alpha+\beta = \frac{12}{3} = 4 \quad \alpha.\beta = \frac{-a}{3} \quad 2\alpha^2 + (4-\alpha)^2 - 4\alpha - 7 = 0$

$\hookrightarrow \beta = 4 - \alpha \quad 3\alpha^2 - 12\alpha + 9 = 0 \quad \alpha^2 - 12\alpha + 27 = 0 \quad (\underbrace{\alpha-3}_{3})(\underbrace{\alpha-9}_{9}) = 0$

$\frac{3}{3} = 1$ و $\frac{9}{3} = 3$ یا

① $\beta = 3$ یا $\beta = 1$ ②

$\Rightarrow \alpha.\beta = 3 \to a = -9 \to \frac{-9}{3} = -3$ برابر

۶) $b = \frac{(2a+3)+(7-2a)}{2} = 5 \to S = 5, 3 \quad a-2 \geq 1 \Rightarrow a \geq 3 \quad 7-2a \geq 1 \quad a \leq 3$

$\Rightarrow a = 3 \Rightarrow A = |^{9}_{1} \to y = a(x-5)^2 + 3 \xrightarrow[(9,1)]{\text{جایگذاری}} 1 = a(9-5)^2 + 3 \to a = \frac{-1}{8}$

$\Rightarrow y = -\frac{1}{8}(x-5)^2 + 3 \quad x = 0 \to y = \frac{-25}{8} + \frac{24}{8} = \frac{-1}{8} = |^{0}_{-\frac{1}{8}}$ نقطه برخورد

$d = \sqrt{0^2 + (-\frac{1}{8})^2} = \frac{1}{8}$

$\alpha+\beta=1 \qquad \beta=1-\alpha \qquad 40(1-\alpha)^2+20\alpha^2-20(1-\alpha)=17$ 17

$60\alpha^2-60\alpha+3=0 \rightarrow S=1,\ P=\frac{1}{20} \qquad |\alpha-\beta|=\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{\frac{4}{5}}}{1}=\boxed{\frac{2}{\sqrt{5}}}$

$\rightarrow \alpha^2-\alpha+\frac{1}{20}=0$

$\left(\frac{3}{2}\right)=k(0-3)^2-\frac{1}{2} \rightarrow \frac{3}{2}=9k-\frac{1}{2} \Rightarrow k=\frac{2}{9} \Rightarrow y=\frac{2}{9}(x-3)^2-\frac{1}{2}$ 18

$\beta=\frac{2}{9}(1-3)^2-\frac{1}{2}=\boxed{\frac{17}{18}}$

$x^2+6x+a=0 \begin{cases} \alpha=-3+\sqrt{9-a} \rightarrow \alpha^2=18-a-6\sqrt{9-a} \\ \beta=-3-\sqrt{9-a} \rightarrow \beta^2=18-a+6\sqrt{9-a} \end{cases}$ 19

$3\alpha^2+2\beta^2=90-5a-6\sqrt{9-a}=12\sqrt{2}+85 \rightarrow 5a+6\sqrt{9-a}=5+6\sqrt{8}$

$\left.\begin{array}{l} 90-5a+6\sqrt{9-a}=12\sqrt{2}+85 \\ 5-5a+6\sqrt{9-a}=12\sqrt{2} \end{array}\right\} \cancel{6}^{1}\sqrt{9-a}=\cancel{12}^{2}\sqrt{2} \rightarrow \sqrt{9-a}=2\sqrt{2}$

$9-a=8 \rightarrow \boxed{a=1}$

$\frac{1}{\sqrt{\alpha}}+\frac{1}{\sqrt{\beta}}=5 \rightarrow \frac{\sqrt{\alpha}+\sqrt{\beta}}{\sqrt{\alpha\beta}}=5 \rightarrow \sqrt{\alpha}+\sqrt{\beta}=5\sqrt{\alpha\beta} \qquad S+2\sqrt{P}=25P \rightarrow \underbrace{S+2\sqrt{\frac{1}{49}}}_{\frac{25}{49}}$ 20

$S=\frac{25}{49}-\frac{1}{3}=\frac{13}{49} \qquad \frac{m+14}{49}=\frac{13}{49} \rightarrow \boxed{m=-1} \rightarrow mx^2+3x+2$

$\rightarrow -x^2+3x+2 \rightarrow P=\frac{2}{-1}=\boxed{-2}$