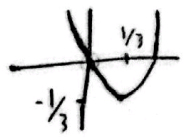
نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

۱

الف)

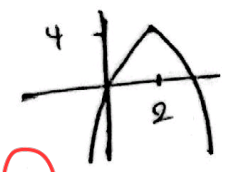
min | $\frac{1}{3}$, $-\frac{1}{3}$



سوم ✓

ب)

max | $\frac{-4}{-2}=2$, $\frac{-16}{-4}=4$

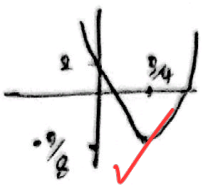


~~دوم~~ (۲)

۲

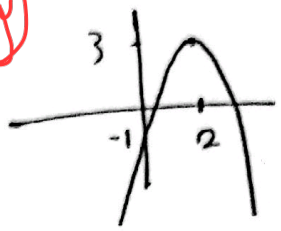
الف)

min | $\frac{5}{4}$, $-\frac{9}{8}$



ب)

max | 2 , 3 (۲)



۳

الف) $\sin\theta = 1/\sqrt{13} = \sqrt{13}/13$ ✓

ب) $s^2 - 2p = 1+6 = 7$ ✓

ج) $s^3 - 3sp = 1+9 = 10$ ✓

د) $D^3 + 3pD = 13\sqrt{13} - 9\sqrt{13} = 4\sqrt{13}$ ✓ (۲)

۴ (۱/۵)

$y=0 \rightarrow x-2=0 \Rightarrow x=2$ ✓

$x^2 - ax + a = 0 \Rightarrow x^2 - 4x + 4 = 0 \Rightarrow x=2$ ✓

یک جواب مضاعف، یک جواب مشترک

$\Delta = 0$

$a^2 - 4a = 0 \Rightarrow a = 4$ ✓

(I) $x^2 - ax + a$ → ۲ ریشه مضاعف → $(x-2)^2 = x^2 - 4x + 4$, $a=4$

(II) $x^2 - ax + a$ → ریشه ندارد → $\Delta < 0$ → $a^2 - 4a < 0$ → $0 < a < 4$

} → $0 \le a < 4$

۵ (۱/۵)

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

$s^2 - 2p + \alpha(\alpha - \beta) = 7$

$\alpha + \beta = 9 \Rightarrow \alpha - 4 = -\beta$

$s=4$, $p=7$ } $\alpha = 1, \beta = 4$

$16 + 3\times(\frac{a}{3}) = 7 \Rightarrow a = -9$

$\Rightarrow \frac{a}{\beta} = \frac{-9}{4}$

$\alpha + \beta = -\frac{-12}{3} = 4 \rightarrow \beta = 4 - \alpha$ (I)

$2\alpha^2 + \beta^2 - 4\alpha = 0 \xrightarrow{(I)} 2\alpha^2 + (4-\alpha)^2 - 4\alpha = 0 \rightarrow 3\alpha^2 - 12\alpha + 9 = 0 \rightarrow \begin{cases} \alpha = 1 \\ \alpha = 3 \end{cases} \rightarrow a = -9$

$\frac{a}{\alpha_{max}} = \frac{-9}{3} = -3$

$x_S = b = \frac{(5-2a)+(2a+3)}{2} = a \rightarrow S(a,3)$

$5-2a>0 \rightarrow a<\frac{5}{2}$
$2a+3>0 \rightarrow a>-\frac{3}{2}$
$a-2>0 \rightarrow a>2$
} اشتراک $\rightarrow a=3 \rightarrow A(4,1), B(1,1)$

۶

$(y-3)=a(x-a)^2 \xrightarrow{(1,1)} (1-3)=a(1-a)^2 \rightarrow a=-\frac{1}{8} \rightarrow (y-3)=-\frac{1}{8}(x-a)^2$

$x=0 \rightarrow (y-3)=-\frac{1}{8}(0-a)^2 \rightarrow y=3-\frac{a^2}{8} \rightarrow y=\frac{1}{8} \rightsquigarrow$ عرض $=\frac{1}{8}$

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$20(\alpha^2-2\beta)+20(\beta^2-\beta)=17$ $\quad a(\beta^2-\beta)=b \Rightarrow \alpha\beta^2-\beta=\frac{b}{a}$

$20+40\frac{b}{a}+20\frac{b}{a}=17$

$\Rightarrow 60\frac{b}{a}=-3 \Rightarrow \frac{b}{a}=-\frac{1}{20}$ $\quad \cdot 20x^2+20x-1=0$

$D=\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{320}}{20}=\frac{\sqrt{20}}{5}$ ✓

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طول رأس $=x=\frac{-a+1}{2}=-2$

ضابطه $=f(x)=a(x+2)^2-\frac{1}{2}$

$\rightarrow (0,\frac{3}{2}) \in f(x) \rightarrow \frac{3}{2}=a(0+2)^2-\frac{1}{2} \rightarrow a=\frac{1}{2}$

$\rightarrow (1,\beta) \in f(x) \rightarrow \beta=\frac{1}{2}(1+2)^2-\frac{1}{2} \rightarrow \beta=4$

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$x^2+6x+a=0 \rightarrow \begin{cases} S=\frac{-b}{a}=-6 \\ P=\frac{c}{a}=a \end{cases}$ $\quad |\alpha-\beta|=\frac{\sqrt{\Delta}}{|a|}=\sqrt{36-4a}$ $\quad \alpha<\beta \rightarrow \alpha-\beta<0$

$3\alpha^2+2\beta^2=112\sqrt{2}+80 \rightarrow \frac{5}{2}(\alpha^2+\beta^2)+\frac{1}{2}(\alpha^2-\beta^2)=112\sqrt{2}+80 \rightarrow \frac{5}{2}(S^2-2P)+\frac{1}{2}(\alpha+\beta)(\alpha-\beta)=112\sqrt{2}+80$

$\rightarrow \frac{5}{2}(S^2-2P)-\frac{1}{2}S\sqrt{36-4a} \rightarrow \frac{5}{2}(36-4a)-\frac{1}{2}(-6)\sqrt{36-4a}=112\sqrt{2}+80 \rightarrow 90-5a+3\sqrt{36-4a}=112\sqrt{2}+80$

$\begin{cases} 90-5a=80 \rightarrow a=1 \\ 3\sqrt{36-4a}=112\sqrt{2} \rightarrow 36-4a=32 \rightarrow a=1 \end{cases}$

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$A=\sqrt{\frac{1}{x_1}}+\sqrt{\frac{1}{x_2}}=5 \rightarrow A^2=\frac{1}{x_1}+\frac{1}{x_2}+2\sqrt{\frac{1}{x_1x_2}}=\frac{x_1+x_2}{x_1x_2}+2\sqrt{\frac{1}{x_1x_2}}=\frac{S}{P}+2\sqrt{\frac{1}{P}}=25$

$\rightarrow m+14+2(4)=25 \rightarrow m+22=25 \rightarrow m=-1$

$\Rightarrow P=\frac{c}{a}=\frac{2}{m}=\frac{2}{-1}=-2$

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