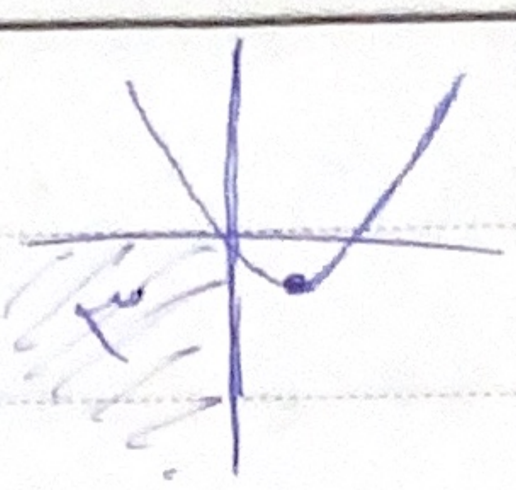
سروش اخوان   تکلیف ۲۷   دهم بیر B

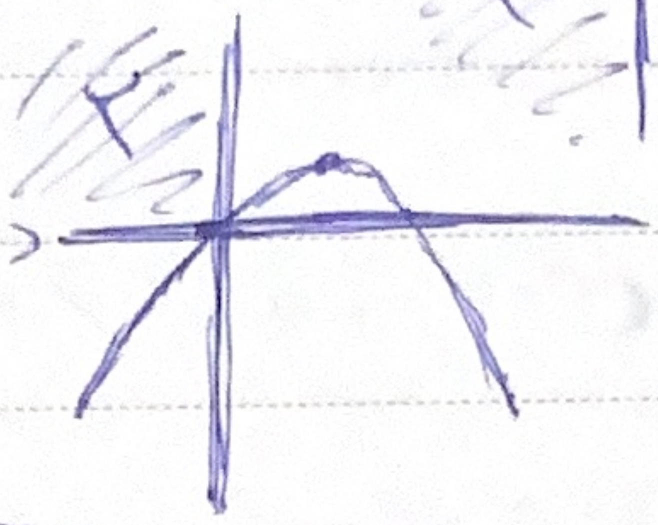
Subject:
Date

۱- الف) $3x^2-2x = x(3x-2)=0 \Rightarrow x=0 ; \frac{2}{3} , a>0 \Rightarrow$



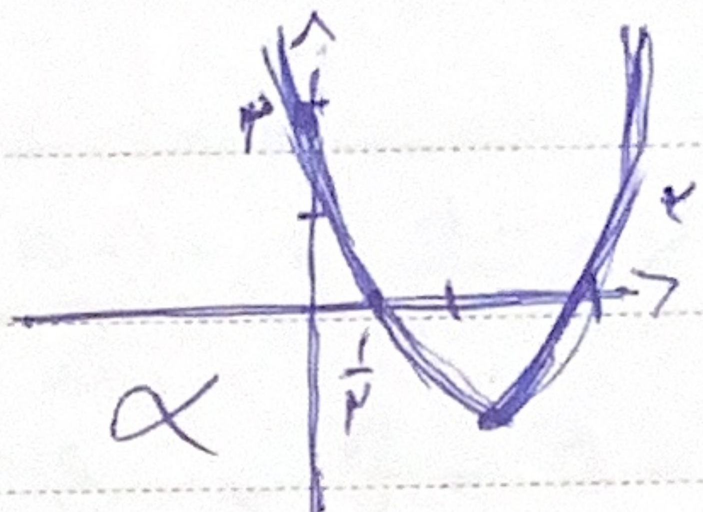
از ناحیه سوم می‌گذرد $\Rightarrow$

ب) $-x^2+4x = x(-x+4)=0 \Rightarrow x = 4 ; 0 , a<0 \Rightarrow$



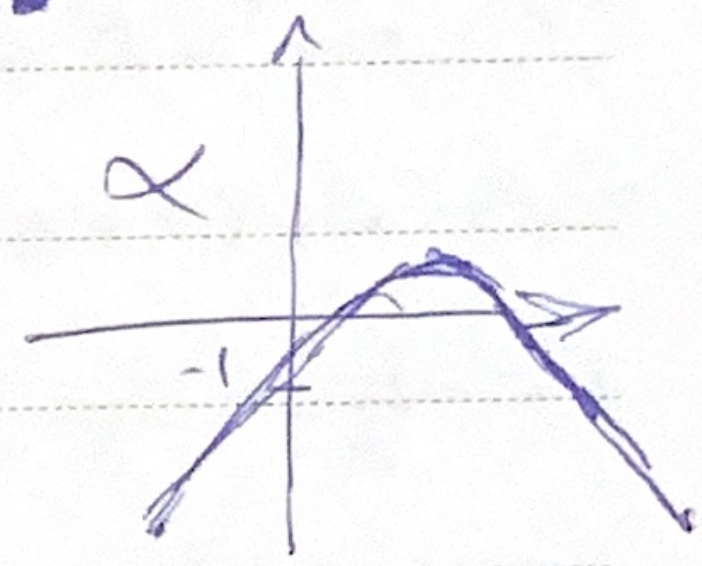
$\Rightarrow$ ناحیه ۳

۲- الف) $2x^2-7x+3=0 \Rightarrow x = 3 ; \frac{1}{2} , a>0 , c=3 \Rightarrow$



ناحیه‌ی ۱، ۲، ۴ $\Rightarrow$

ب) $-x^2+4x-1$ $\frac{c}{a}>0 , S>0 , a<0 , c=-1 \Rightarrow$



$\Leftarrow$ ناحیه‌ی ۱، ۳، ۴

۳- $|\alpha-\beta| = \frac{\sqrt{\Delta}}{|a|}$ / $P=\frac{c}{a}$ / $S=\frac{-b}{a}$

$\Rightarrow$ الف) $\frac{\frac{-b}{a}}{\frac{\sqrt{\Delta}}{|a|}} = \frac{\alpha+\beta}{\alpha-\beta} = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

ب) $\alpha^2+\beta^2 = S^2-2P = 1-2(-3) = 7$

ج) $\alpha^3+\beta^3 = S^3-3SP = 1-3(1\times -3) = 10$

د) $\alpha^3-\beta^3 = (\alpha-\beta)(\alpha^2+\beta^2+\alpha\beta) = (\frac{\sqrt{\Delta}}{|a|})(S^2-2P+P) = \sqrt{13}(1+3) = 4\sqrt{13}$

۴- $(x-2)(x^2-ax+a)=0 , x=2 \Rightarrow x^2-ax+a \xrightarrow{x=2} x^2-4x+4 \Rightarrow a=4$

$x^2-ax+a \xrightarrow{\Delta<0} a^2-4a<0$ $a(a-4)$ $a=0, 4$

+ 0 − 4 +

$a \in (0,4)$

$4 \cup (0,4) = (0,4]$

۵- $3x^2-12x-a=0 \Rightarrow P=\frac{-a}{3} , S=4$

$\alpha^2+S^2-2P-4\alpha = \alpha^2+16-2P-\alpha(\alpha+\beta) = 7$

$\Rightarrow \alpha^2-2P-P-\alpha^2 = -9 \Rightarrow -3P=-9 \Rightarrow -3(\frac{-a}{3}) = -9 \Rightarrow a=-9$

$\Rightarrow 3x^2-12x+9=0$ $x=1,3$ $\Rightarrow \frac{a}{3} = \frac{-9}{3} = -3$

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$7-2a+2a+3=10=S \Rightarrow \frac{-b}{2a}=5$ ext $\Big|^{5}_{3}$

$\frac{-b}{2a}=5 \Rightarrow b=-10a \Rightarrow$ معادله $\Rightarrow ax^2-10ax+c=0$

$7-2a>0 \Rightarrow a<3/5 \ , \ a-2>0 \Rightarrow a>2 \ , a\in N \Rightarrow a=3 \Rightarrow \Big|^{1}_{1}$

$\Big|^{5}_{3} \Rightarrow 25a-50a+c=3 \ , \ \Big|^{1}_{1} \Rightarrow a-10a+c=1 \Rightarrow a=\frac{-1}{8} \ , \ c=\frac{-1}{8}$ $\frac{1}{8} \leftarrow$ جواب

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$\alpha+\beta=S=\frac{-b}{a}=\frac{-(-a)}{a}=1$

$2\beta^2+\alpha^2-\beta=\frac{17}{20} \Rightarrow \beta^2-\beta+(\alpha+\beta)^2-2\alpha\beta=\frac{17}{20}=\beta(\beta-1)+1-2\alpha\beta$

$=\beta(\beta-(\alpha+\beta))+1-2\alpha\beta=-3\alpha\beta+1=\frac{17}{20} \Rightarrow \alpha\beta=\frac{1}{20}$

$P=-\frac{b}{a}=\frac{1}{20} \Rightarrow a=-20b \Rightarrow -20bx^2+bx-b=0 \Rightarrow -20x^2+20x-1=0$

$\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{320}}{20}=\frac{8\sqrt{5}}{20}=\frac{2\sqrt{5}}{5}$

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$ax^2+bx+c=0 \ , \ c=\frac{3}{2} \Rightarrow ax^2+bx+\frac{3}{2}=0$

$\frac{-b}{2a}=\frac{-5+1}{2} \Rightarrow b=4a \qquad y=\frac{-\Delta}{4a}=\frac{b^2-4ac}{4a}=\frac{1}{2}$

$\frac{(4a)^2-(4a)c}{4a}=4a-c=\frac{1}{2} \Rightarrow a=\frac{1}{2} \ , b=2 \qquad \frac{x^2}{2}+2x+\frac{3}{2}=\beta$

$\Rightarrow x^2+4x+3-2\beta=0 \Rightarrow x=\begin{cases}-5\\ 1 \longrightarrow 1+4+3-2\beta \Rightarrow \underline{\beta=4}\end{cases}$

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$x^2+6x+a=0 \Rightarrow x=\begin{cases}\frac{-6-\sqrt{36-4a}}{2}=-3-\sqrt{9-a}=\alpha \\ \frac{-6+\sqrt{36-4a}}{2}=-3+\sqrt{9-a}=\beta\end{cases}$ $\leftarrow \alpha<\beta$

$2\beta^2+3\alpha^2=(36-2a-12\sqrt{9-a})+54-3a+18\sqrt{9-a}$

$=90-5a+6\sqrt{9-a}=12\sqrt{2}+85 \Rightarrow 5-5a+6\sqrt{9-a}=12\sqrt{2} \Rightarrow a=1$

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$\frac{1}{\sqrt{\alpha}}+\frac{1}{\sqrt{\beta}}=\frac{\sqrt{\alpha}+\sqrt{\beta}}{\sqrt{\alpha\beta}}=5 \Rightarrow \frac{\alpha+\beta+2\sqrt{\alpha\beta}}{\alpha\beta}=25$

$\Rightarrow \frac{\frac{m+14}{36}+2\sqrt{\frac{1}{36}}}{\frac{1}{36}}=25 \Rightarrow \frac{m+14}{36}+\frac{12}{36}=\frac{25}{36} \Rightarrow 14+12+m=25 \Rightarrow m=-1$

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