Date :   Subject :

$-mx^2 + mx + 1 = -m - x$ ۱۰

$-mx^2 + mx + x + m + 1 = 0$

$-mx^2 + (m+1)x + m + 1 = 0$

$\Delta < 0 \to m^2 + 2m + 1 - 4(-m^2 - m) < 0$

$\to m^2 + 2m + 1 + 4m^2 + 4m < 0$

$\to 5m^2 + 6m + 1 < 0 \to m^2 + 6m + 5 < 0$

$\to (m+1)(m+5) < 0 \to m = -\frac{1}{5}, \; -1$

$-1 \qquad -\frac{1}{5}$

$+ \quad - \quad +$ → معدود صحیح

۲۳ دالکنز   به نام خدا   ۲۰   الیا مفاری

$y = ax^2 + bx + c \xrightarrow{(3,1)} 1 = 9a + 3b + c \xrightarrow{} \boxed{15a + c = 1}$ ①

ext $\left| \begin{array}{l} \frac{-b}{2a} = -1 \to -b = -2a \to b = 2a \\ \frac{-\Delta}{4a} = 9 \to -b^2 + 4ac = 36a \end{array} \right.$

$(-1,9) \to 9 = a - b + c \xrightarrow{②} \boxed{9 = -a + c}$ ۲

$\left.\begin{array}{l} 15a + c = 1 \\ -a + c = 9 \end{array}\right\} 16a = -8 \to a = -\frac{1}{2}$

$c = \frac{17}{2}$

$b = -1$

$y = -\frac{1}{2}x^2 - x + \frac{17}{2}$

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$\Delta>0 \longrightarrow b^2-4ac>0 \longrightarrow m^2-8m-48>0$ ۲

$\longrightarrow (m-12)(m+4)$ $(-\infty,-4)\cup(+12,+\infty)$

$-\frac{b}{a}>0 \longrightarrow -\frac{m}{2}>0 \longrightarrow \underline{m<0}$ ۲

$(-6,-4)$

$\frac{c}{a}>0 \longrightarrow \frac{m+6}{2}>0 \longrightarrow \underline{m>-6}$

$3x^2+(2m-1)x+2-m=0$ $\frac{7}{2}$ ۱۰

$\Delta>0 \longrightarrow (2m-2)^2-(4)(3)(2-m)>0 \longrightarrow 4m^2+4-4m-24+12m>0$

$\longrightarrow 4m^2+8m-20>0$

$-\frac{b}{a}=\frac{a}{c} \longrightarrow -bc=a^2 \longrightarrow (-1)(2m-1)(2-m)=9$ ۲

$\longrightarrow 2m^2-5m+2=9$

$\longrightarrow 2m^2-5m-7=0$

$\longrightarrow m^2-5m-14=0 \longrightarrow (m-7)(m+2)=0$

$\longrightarrow m \begin{cases} m=-\frac{2}{2}=-1 \times \\ m=\frac{7}{2} \checkmark \end{cases}$ $\Delta<0$

$x=x^2-4 \longrightarrow x^2-x-4=0 \longrightarrow \alpha^2-\alpha-4=0$ ۲

$\longrightarrow \beta^2-\beta-4=0$

$S: \alpha+\beta=1 \quad P: \alpha\beta=-4$

$\beta^3+\frac{1}{\alpha}, \alpha^3+\frac{1}{\beta}$ ۲

جمع: $\alpha^3+\beta^3+\frac{1}{\alpha}+\frac{1}{\beta}=\alpha^3+\beta^3+\frac{\alpha+\beta}{\alpha\beta}=S^3-3SP+\frac{S}{P}$

$=1+12-\frac{1}{4}=\frac{51}{4}=-\frac{b}{a}$ ضرب: $\alpha^3\beta^3+\beta^2+\alpha^2+\frac{1}{\alpha\beta}$

$y=x^2-\frac{51}{4}x+\frac{-221}{4}$ $=S^3-3SP+S^2-2P+\frac{1}{P}$

$=-64+9-\frac{1}{4}=\frac{-221}{4}$

PARAMOUNT

$y=x^2-Sx+P$

$$\left(\sqrt[3]{x^2}+\frac{1}{\sqrt[3]{x^2}}+1\right)\left(\sqrt[3]{x^2}-1\right)=2\sqrt[3]{x}\xrightarrow{a=\sqrt[3]{x}}\left(a^2+\frac{1}{a^2}+1\right)\times\left(a^2-1\right)=2a$$ ۵

$$\rightarrow a^4-a^2+1-\frac{1}{a^2}+a^2-1=2a\rightarrow a^4-\frac{1}{a^2}=2a$$

$$\xrightarrow{\times a^2} a^6-2a^3-1=0\rightarrow x^2-2x-1=0$$ ۲

$$-\frac{b}{a}=2$$

$$3x^2-ax+4=0\xrightarrow{\alpha}3\alpha^2-a\alpha+4=0\quad\boxed{16}$$ ۶

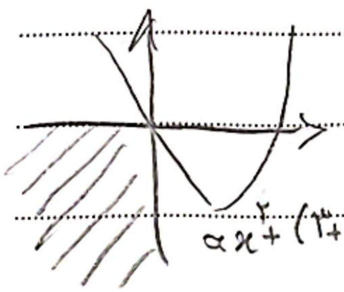
$$\rightarrow -\frac{b}{a}=\frac{-a}{3}=4\alpha$$

$$\frac{c}{a}=\alpha\times3\alpha=3\alpha^2\qquad\rightarrow\frac{c}{a}=3\alpha^2=\frac{4}{3}$$

$$-\frac{b}{a}=3\alpha+\alpha=4\alpha\qquad\rightarrow\alpha^2=\frac{4}{9}\rightarrow\alpha=\pm\frac{2}{3}$$ ۲

$$\alpha=\frac{2}{3}\Rightarrow 3\times\frac{4}{9}+\frac{2}{3}a+4=0\rightarrow\frac{16}{3}+\frac{2}{3}a=0\rightarrow a=-\frac{\frac{16}{3}}{\frac{2}{3}}=\boxed{-8}$$

$$\alpha=-\frac{2}{3}\Rightarrow 3\times\frac{4}{9}-\frac{2}{3}a+4=0\rightarrow\frac{16}{3}-\frac{2}{3}a=0\rightarrow a=\frac{\frac{16}{3}}{\frac{2}{3}}=\boxed{8}$$



$ax^2+(3+2a)x=y$

مینیمم دار $\Rightarrow \boxed{a>0}$ ۷

جمع ریشه‌ها $=-\frac{b}{a}>0$

$$\frac{-2a-3}{a}>0\rightarrow\frac{2a+3}{a}<0$$

$-\frac{3}{2}$		0	
+	−		+

$$\rightarrow -\frac{3}{2}<a<0$$

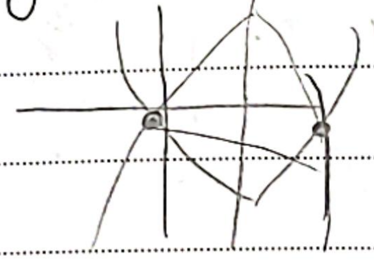
$$(a>0)\cup\left(-\frac{3}{2}<a<0\right)=\boxed{\varnothing}$$ ۲

$y = x^2 + ax - 2$

$y = -x^2 - 2x + b$

$x_{\text{رأس}}: \frac{-b}{2a} = \frac{2}{-2} = \frac{-a}{2}$ ۸

$\longrightarrow a = 2$



$y = x^2 + 2x - 2 \xrightarrow{y=1} 1 = x^2 + 2x - 2$

$\longrightarrow (x+3)(x-1) = 0$ ۴

$\begin{cases} x = 1 \longrightarrow (1,1) \\ x = -3 \longrightarrow (-3,1) \end{cases}$

$y = -x^2 - 2x + b \xrightarrow{(-3,1)} 1 = -9 + 6 + b \longrightarrow b = 4$

$ab = \boxed{8}$

$2ax^2 + ax - 6 = 0 \longrightarrow \frac{-b}{a} = \frac{-1}{2} \qquad \frac{c}{a} = \frac{-6}{2a} = \frac{-3}{a}$ ۹

$2x^2 - ax + b = 0 \longrightarrow \frac{-b}{a} = \frac{+a}{2} \qquad \frac{c}{a} = \frac{b}{2}$ $\boxed{-3}$

$\frac{a}{2} = \cancel{\frac{-1}{2}}^{+\frac{1}{2}} = 1 \longrightarrow a = 1$

$\alpha . \beta = \frac{b}{2}$ ۴

$(\alpha + \frac{1}{2})(\beta + \frac{1}{2}) = 3 \Rightarrow \frac{1}{4} + \overbrace{(\alpha+\beta)}^{-\frac{1}{2}} \times \frac{1}{2} + \overbrace{\alpha . \beta}^{\frac{b}{2}} = 3$

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

$\left[\frac{-6 \times 1}{4}\right] = \left[-\frac{3}{2}\right] = -2 \qquad \longrightarrow \frac{b}{2} = 3 \longrightarrow b = 6$

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$x^۲+۶x+m=0$ جمع ریشه : $-\frac{b}{a}=\alpha+\beta=-۶$ ۹   ۱۵

$x^۲+۲x-۳m=0$ جمع ریشه : $-\frac{b}{a}=\alpha+\theta=-۲$

$\theta-\beta=\boxed{۴}$