نام و نام خانوادگی : فاطمه زهرا جمال زاده   کلاس: دهم دختر A   تکلیف شماره:

۱) $A\begin{vmatrix}-1\\9\end{vmatrix} \rightsquigarrow y=ax^2+bx+c$

$9=a-b+c \xrightarrow{2a=b} 9=a-2a+c$

$-1=\dfrac{-b}{2a} \Rightarrow \boxed{2a=b}$ $\boxed{9=c-a}$

$c=9+a$

$y=ax^2+bx+c \xrightarrow{\begin{vmatrix}3\\1\end{vmatrix}} 1=9a+3b+c$

$1=9a+3(2a)+c$

$1=15a+c \longrightarrow 1=15a+9+a$

$-8=16a$

$c=\dfrac{17}{2} \rightsquigarrow \boxed{b=-1} \rightsquigarrow \dfrac{-1}{2}=a$

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

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۲) ۲ ریشه مثبت $\rightsquigarrow \left\{\begin{array}{l}\dfrac{-b}{2a}>0 \rightsquigarrow \dfrac{-m}{2}>0 \to m<0\\ \dfrac{c}{a}>0 \rightsquigarrow \dfrac{m+6}{2}>0 \to m>-6\end{array}\right\} \Rightarrow -6<m<0$

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۳) $S=\dfrac{1}{P} \rightsquigarrow 3x^2+(2m-1)x+2-m=0$

$\dfrac{1-2m}{3}=\dfrac{3}{2-m} \rightsquigarrow (1-2m)(2-m)=9$

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

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

$x=\dfrac{5\pm\sqrt{(-5)^2-4(-7)(2)}}{4}$

$=\dfrac{5\pm 9}{4}$ → $m=-1$, $m=3/5$

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$x^2 - x - 4 = 0$ س $x^2 = x + 4$ *

$S = x_1 + x_2 = 1$

$P = x_1 x_2 = -4$

$x^3 = x \cdot x^2 \xrightarrow{*.b} x^3 = x(x+4) \to x^2 + 4x \xrightarrow{*.b}$

$x + 4 + 4x = x^3$

$x_1^3 = 5x_1 + 4 \Leftarrow x^3 = 5x + 4$

$x_2^3 = 5x_2 + 4$

معادله جدید س $S' = x_2^3 + \frac{1}{x_1} + x_1^3 + \frac{1}{x_2} =$

$5x_2 + 4 + \frac{1}{x_1} + 5x_1 + 4 + \frac{1}{x_2} =$

$5(\underbrace{x_2 + x_1}_{1}) + 8 + \left(\frac{\overbrace{x_1 + x_2}^{1}}{\underbrace{x_1 x_2}_{-4}}\right) =$

$5 + 8 - \frac{1}{4} = \frac{51}{4}$

$P' = \left(x_2^3 + \frac{1}{x_1}\right)\left(x_1^3 + \frac{1}{x_2}\right) = \left(5x_2 + 4 + \frac{x_2}{P}\right)\left(5x_1 + 4 + \frac{x_1}{P}\right)$

$= \left(\frac{19x_2 + 16}{4}\right)\left(\frac{19x_1 + 16}{4}\right) = \frac{361(\overbrace{x_1 x_2}^{-4}) + 19 \times 16(\overbrace{x_1 + x_2}^{1}) + 256}{16}$

$= \frac{-1444 + 304 + 256}{16} = \frac{-884}{16} = -\frac{221}{4}$

معادله جدید $\to x^2 - S'x + P' = 0$

$x^2 - \frac{51}{4}x - \frac{221}{4} = 0 \to 4x^2 - 51x - 221$

۵)

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

$$\sqrt[3]{x^2}=t \rightsquigarrow \left(t+\frac{1}{t}+1\right)(t-1)=2\sqrt{t}$$

$$\frac{(t^2+1+t)(t-1)}{t}=2\sqrt{t}$$

$$\frac{(t^3-1)}{t}=2\sqrt{t}\xrightarrow[\text{توان ۲}]{}(t^3)^2+1-2t^3=4t^3$$

$$\to (t^3)^2-6t^3+1=0$$

$$t^3=a \longrightarrow a^2-6a+1 \rightsquigarrow a=\frac{6\pm\sqrt{36-4(1)(1)}}{2}=\frac{6\pm4\sqrt{2}}{2}$$

$$a \longrightarrow 3\pm2\sqrt{2}$$

$$\left(\sqrt[3]{x^2}\right)^3=a \to x^2=3\pm2\sqrt{2}$$

$t=\sqrt[3]{x^2} \Leftarrow$ باید بیشتر یا مساوی یک باشه

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$$x^2 \longrightarrow 3-2\sqrt{2} \Rightarrow x^2=(\sqrt{2}-1)^2 \to x_1=\pm(\sqrt{2}-1)$$

$$x^2 \longrightarrow 3+2\sqrt{2} \Rightarrow x^2=(1+\sqrt{2})^2 \to x_2=\pm(1+\sqrt{2})$$

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$$\Rightarrow x_1+x_2 \longrightarrow 1+\sqrt{2}-(1+\sqrt{2})=\boxed{0}$$

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۶)

$$3x^2-ax+4=0$$

$$x_2=3x_1 \longrightarrow S=x_1+x_2=4x_1=\frac{-b}{a} \Rightarrow 4x_1=\frac{a}{3} \to \boxed{a=12x_1}$$

$$P=x_1x_2=3x_1^2=\frac{4}{3} \to x_1^2=\frac{4}{9}$$

$$x_1=\pm\frac{2}{3}$$

$$a=12x_1 \xrightarrow{x_1=\frac{2}{3}} a_1=8$$

$$a=12x_1 \xrightarrow{x_1=-\frac{2}{3}} a_2=-8$$

$$|a_1-a_2|=|8-(-8)|=16$$

SUBJECT

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$y = ax^2 + (3+2a)x \xrightarrow{\text{در ناحیه ۳ باشد}} a > 0$ ۱۷

$\frac{-b}{a} \geq 0$

$-\frac{+3+2a}{a} \geq 0 \longrightarrow -(3+2a) \geq 0$

$\downarrow a>0$ $\quad 3+2a \leq 0 \to 3 \leq -2a \to \frac{-3}{2} \geq a$

$\frac{-3}{2} \quad 0$; $-\ \ +\ \ -$ $\longrightarrow \frac{-3}{2} \leq a < 0$

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(1) $y = x^2 + ax - 2 \rightsquigarrow \frac{-b}{2a} = \frac{-a}{2}$ ۱۸

(2) $y = -x^2 - 2x + b \rightsquigarrow \frac{-b}{2a} = \frac{2}{-2} = -1$

$\rightarrow \frac{-a}{2} = -1$

$-a = -2$

$\boxed{a = 2}$

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

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

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

$2x^2 + 4x - 2 + b = 0 \xrightarrow{x=-1}$

$2(-1)^2 + 4(-1) - 2 + b = 0 \Rightarrow \boxed{b = 4}$

$ab = 2 \times 4 = 8$

$2x^2 - ax + b = 0 \rightsquigarrow \alpha' + \beta' = \frac{a}{2}$ ۱۹

$\alpha'\beta' = \frac{b}{2}$

$2ax^2 + ax - 6 = 0 \rightsquigarrow \alpha + \beta = \frac{-a}{2}$

$\alpha\beta = -3$

$\alpha + \frac{1}{2} + \beta + \frac{1}{2}$

$\frac{-a}{2} + 1 = \frac{a}{2}$

$\boxed{1 = a}$

$\alpha' = \alpha + \frac{1}{2}$

Senobar $\beta' = \beta + \frac{1}{2}$

SUBJECT

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$$\alpha'\beta' = \frac{b}{۲} \rightarrow \left(\alpha+\frac{۱}{۲}\right)\left(\beta+\frac{۱}{۲}\right)=\frac{b}{۲}$$

$$\alpha\beta + \frac{۱}{۲}(\alpha+\beta) + \frac{۱}{٤} = \frac{b}{۲}$$

$$-۳ + \frac{۱}{۲}\left(\frac{-a}{۲}\right) + \frac{۱}{٤} = \frac{b}{۲}$$

$$-۳ + \cancel{\frac{۱}{۲}\left(\frac{-۱}{۲}\right)} + \cancel{\frac{۱}{٤}} = \frac{b}{۲}$$

$$-۳ = \frac{b}{۲} \rightarrow \boxed{b=-۶}$$

$$\left[\frac{ab}{٤}\right] = \left[\frac{-۶}{٤}\right] = \left[\frac{-۳}{۲}\right] = -۲$$

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$$(۱)\ x^۲+۲x-۳m=0 \rightarrow x^۲+۲x-۳(-۶x-x^۲)$$

$$x^۲+۲x+۱۸x+۳x^۲ \rightarrow ٤x^۲+۲۰x=0$$

$$(۲)\ x^۲+۶x+m=0 \rightarrow m=-۶x-x^۲$$

$$٤x(x+۵)=0$$

$$٤x=0 \rightarrow \boxed{x=0}$$

$$x+۵=0$$

$$\checkmark\ \boxed{x=-۵}$$

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$$\downarrow$$

$$m = -۶(-۵)-(-۵)^۲$$

$$m = ۳0 - ۲۵ = ۵$$

$$(۱)\ x^۲+۲x-۱۵=0 \qquad x=-۵ \times \qquad x=۳$$

$$\rightarrow ۳-(-۱)=٤$$

$$(۲)\ x^۲+۶x+۵=0 \rightarrow x=-۱ \qquad x=-۵ \times$$