Subject: ( ) ١٧/٧۵ page: ( )

پریا یاسینی

۱-

$y=(a-1)x^2+x+3$

$x_s=\frac{-b}{2a}=2=\frac{-1}{2a-2} \to 4a-4=-1 \to 4a=3 \to a=\frac{3}{4}$ ۲

$y=-\frac{1}{4}x^2+x+3$

$0=-\frac{1}{4}x^2+x+3 \to 0=-x^2+4x+12 \to 0=x^2-4x-12$

$\boxed{x=6}, x=-2$ غ ق ق

L_1 طول مثبت

۲-

$f(x)=mx^2-5x+m$ ۲

$\boxed{m<0}$

$\Delta>0 \to 25-4(m)(m)>0 \to 25-4m^2>0 \to 25>4m^2 \to$

$\frac{25}{4}>m^2 \to \boxed{-\frac{5}{2}<m<\frac{5}{2}}$ اشتراک $\to m=(-\frac{5}{2},0)$

۳-

$\frac{3-\sqrt{5}}{3} , \frac{3+\sqrt{5}}{3} \to S=\frac{3+3+\cancel{\sqrt{5}}-\cancel{\sqrt{5}}}{3}=2$ ۲

$P=(\frac{3-\sqrt{5}}{3})(\frac{3+\sqrt{5}}{3}) \to \frac{9-5}{9}=\frac{4}{9}$

$x^2-Sx+P=0 \to x^2-2x+\frac{4}{9}=0 \to 9x^2-18x+4=0$

-۴ $\quad P=\frac{m+2}{2} \quad S=4 \quad \alpha<\beta$

$2x^2-8x+m+2=0$

$3\alpha^2+\beta^2=12$

$2\alpha^2+\underbrace{\alpha^2+\beta^2}_{S^2-2P}=12 \to 2\alpha^2+16-m-2=12$

$2\alpha^2=\underbrace{8\alpha}_{4\alpha}-m-2$

$\alpha\beta=\frac{\cancel{m}+2}{2}=\frac{4\alpha+2}{2}=2\alpha+1$

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

$8\alpha-m-2+16-m-2=12$

$8\alpha-2m+12=12$

$8\alpha-2m=0$

$8\alpha=2m \to m=4\alpha$

$\alpha+\beta=\frac{2\alpha+1}{\alpha}+\frac{\alpha^2}{\alpha}=\frac{\alpha^2+2\alpha+1}{\alpha}=4 \to \alpha^2+2\alpha+1=4\alpha$

$\alpha^2-2\alpha+1=0 \to \alpha=1$

$\underset{1}{\alpha}+\beta=4 \to 1+\beta=4 \to \beta=3$

$m=4\alpha \to \boxed{m=4}$

-۵

$S\left|\begin{matrix}2\\9\end{matrix}\right. \quad A\left|\begin{matrix}0\\5\end{matrix}\right.$

$y=a(x-h)^2+k \to y=a(x-2)^2+9 \xrightarrow[x=0]{y=5} 5=4a+9$

$\to -4a=4 \to a=-1$

$y=-1(x-2)^2+9 \to y=-1(x^2+4-4x)+9 \to y=-x^2+4x-4+9$

$\to y=-x^2+4x+5 \xrightarrow[\text{محور طولها}]{\text{بالای}} -x^2+4x+5>0$

	-1		5	
$-$	0	$+$	0	$-$

$\to -1<x<5$

$\alpha x^2 - 7x + 9\beta = 0 \qquad \beta > 0$ -۶

$\alpha+\beta = \frac{7}{\alpha}$

$\alpha\beta = \frac{9\beta}{\alpha} \to \alpha^2\beta = 9\beta \to \alpha^2 = 9 \to \alpha = \mp 3$

اگر $\alpha = 3 \to \alpha+\beta = \frac{7}{\alpha} \to 3+\beta = \frac{7}{3} \to \beta = \frac{7}{3} - 3 = \frac{-2}{3}$

پس $\alpha \neq 3$ نیست زیرا β نباید منفی باشد ۱

اگر $\alpha = -3 \to -3+\beta = \frac{7}{-3} \to \beta = -\frac{7}{3}+3 = \frac{2}{3}$ ✓

$\frac{1}{\alpha}+\frac{1}{\beta} = \frac{1}{-3}+\frac{1}{\frac{2}{3}} = \frac{-1}{3}+\frac{3}{2} = \frac{7}{6}$

$x^2+mx-2m=0$ -۷

$\alpha^2 = 2m - m\alpha$ $\qquad \alpha+\beta=-m$ $\qquad$ ۰/۵

$\alpha^2 - m\beta = 8$

$\alpha^2 - m\beta = 8$ $\qquad 2m+m^2=8$

$\alpha+\beta = -m$

$m=-4 \quad \Delta<0$ ✗ $\qquad S=-m=-2$

$m=2 \quad \Delta>0$ ✓

$\alpha\beta = -2m \to \beta = \frac{-2m}{\alpha}$

$\alpha^2 - m\left(\frac{-2m}{\alpha}\right) = 8 \to \alpha^2+\frac{2m^2}{\alpha} = 8 \to \boxed{\alpha^3+2m^2 = 8\alpha}$

$\alpha+\beta = -m \ , \ \beta = \frac{-2m}{\alpha}$

$\alpha + \frac{-2m}{\alpha} = -m \to \alpha^2 - 2m = -m\alpha \to \alpha^2 = -m\alpha + 2m \to$

$\boxed{m = \frac{\alpha^2}{2-\alpha}} \longrightarrow \alpha^3 + 2\left(\frac{\alpha^2}{2-\alpha}\right)^2 = 8\alpha$

ادامه ← ۷-

$\xrightarrow{\times(2-\alpha)^2} \alpha^3(2-\alpha)^2+2\alpha^4=8\alpha(2-\alpha)^2$

$\alpha^3(4-4\alpha+\alpha^2)+2\alpha^4=8\alpha(4-4\alpha+\alpha^2)$

$4\alpha^3-4\alpha^4+\alpha^5+2\alpha^4=32\alpha-32\alpha^2+8\alpha^3$

$\alpha^5-2\alpha^4+4\alpha^3=32\alpha-32\alpha^2+8\alpha^3$

$\alpha^5-2\alpha^4-4\alpha^3+32\alpha^2-32\alpha=0$

$\alpha(\alpha^4-2\alpha^3-4\alpha^2+32\alpha-32)=0 \Rightarrow \alpha^4-2\alpha^3-4\alpha^2+32\alpha-32=0$

$\alpha\simeq 1.24$

$m=\frac{\alpha^2}{2-\alpha} \to m=\frac{(1.24)^2}{2-1.24}=\frac{1.5376}{0.76}=2.02$

$\alpha+\beta=-m\simeq-2.02\simeq 2$

۸-

۱٫۲۵

$f(x)=mx^2+4x+\frac{m}{2}+7 \qquad m<0$

$y_s=8 \qquad \frac{-\Delta}{4a}=8 \to \frac{-b^2+4ac}{4a}=8 \to$

$\frac{-16+4m(\frac{m}{2}+7)}{4m}=8 \to \frac{-16+2m^2+28m}{4m}=8 \to$

$-16+2m^2+28m=32m \to 2m^2-4m-16=0 \to$

$m^2-2m-8=0 \begin{cases} \to m=4 \ \text{غ ق ق} \\ \to m=-2 \ ✓ \end{cases}$

$f(x)=-2x^2+4x+6$

$x=3,-1 \qquad k=3$

$f(x)=-2x^2-8x+6 \to 0=-2x^2-8x+6 \to 0=x^2+4x-3 \to$

$\Delta=16-4(1)(-3)=16+12=28 \qquad x_1=-2-\sqrt{7}$ ✗

$x_2=-2+\sqrt{7}$ ✓ $\to k>0$

-۹

$$y = a(x-h)^2 + k \rightarrow y = a(x-2)^2 + 6 \xrightarrow[x=0]{y=4}$$

$$4 = a(4) + 6 \rightarrow -2 = 4a \rightarrow a = \frac{-2}{4} = -\frac{1}{2}$$

$$y = -\frac{1}{2}(x-2)^2 + 6 \rightarrow y = -\frac{1}{2}(x^2 + 4 - 4x) + 6 \rightarrow$$

$$y = -\frac{1}{2}x^2 - 2 + 2x + 6 \Rightarrow y = -\frac{1}{2}x^2 + 2x + 4 \left\} \begin{array}{l} S = \frac{-2}{-\frac{1}{2}} = 4 \\ P = \frac{4}{-\frac{1}{2}} = -8 \end{array} \right.$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{4}{-8} = -\frac{1}{2}$$

-۱۰

$$x^2 - (4a+4)x + (3a^2 + 6a + 3) = 0 \xrightarrow{x=2}$$

$$4 - 8a - 8 + 3a^2 + 6a + 3 = 0 \rightarrow 3a^2 - 2a - 1 = 0 \begin{cases} \rightarrow a = 1 \\ \rightarrow a = -\frac{1}{3} \end{cases}$$

$$a = 1 \rightarrow x^2 - 8x + 12 = 0 \begin{cases} \rightarrow x = 2 \\ \rightarrow x = \boxed{6} \end{cases}$$

اگر $a = -\frac{1}{3} \rightarrow x^2 - \frac{8}{3}x + \frac{4}{3} = 0 \rightarrow 3x^2 - 8x + 4 = 0$

$$\xrightarrow{ac} x^2 - 8x + 12 = 0 \begin{cases} \rightarrow x = \boxed{\frac{2}{3}} \\ \rightarrow x = \frac{6}{3} = 2 \end{cases}$$

$x_1 = 2,\ x_2 = \frac{2}{3} \leftarrow a = -\frac{1}{3}$ اگر

ریشه ی دوم

$x_1 = 2,\ x_2 = 6 \leftarrow a = 1$ اگر