نام و نام خانوادگی ..علی سلامیان.......... پاسخنامه تشریحی تکلیف شماره ..۱۳.. کلاس ...یازدهم ر A.........

۱

$y=(a-1)x^2+x+3 \xrightarrow{x_s=2} \frac{-b}{2a}=2 \rightarrow \frac{-1}{2a-2}=2 \rightarrow 4a-4=-1 \rightarrow 4a=3 \rightarrow a=\frac{3}{4}$

$\rightarrow y=-\frac{1}{4}x^2+x+3 \xrightarrow[\times 4]{y=0} -x^2+4x+12=0 \rightarrow -(x^2-4x-12)=0 \rightarrow -(x-6)(x+2)=0$

$\rightarrow x=6$ ✓ ← طول مثبت

$x=-2$ ✗ طول منفی

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$y=mx^2-5x+m \begin{cases} \Delta>0 \rightarrow 25-4m^2>0 \rightarrow 4m^2<25 \rightarrow m^2<\frac{25}{4} \rightarrow -\frac{5}{2}<m<\frac{5}{2} & \text{I} \\ a<0 \rightarrow m<0 & \text{II} \end{cases}$

x		x_1		x_2	
$f(x)$	$-$	0	$+$	0	$-$

$\Rightarrow m \in \text{I} \cap \text{II} \rightarrow (-\infty,0) \cap (-\frac{5}{2},\frac{5}{2}) = (-\frac{5}{2},0)$

۳

$x^2-Sx+P=0 \rightarrow x^2-(\frac{3-\sqrt{5}}{3}+\frac{3+\sqrt{5}}{3})x+(\frac{3+\sqrt{5}}{3}\times\frac{3-\sqrt{5}}{3})=x^2-2x+\frac{4}{9}$

۴

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

$\Rightarrow 2(16-m-2)-\frac{\sqrt{-8m+48}}{\cancel{2}}\times\cancel{4}\,2=12 \rightarrow 32-2m-4-2\sqrt{-8m+48}=12$

$\rightarrow \sqrt{-8m+48}=8-m \xrightarrow{2} m^2-8m+16=0 \rightarrow (m-4)^2=0 \rightarrow m=4$

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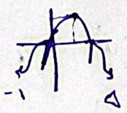
$y=k(x-2)^2+9 \xrightarrow{(0,5)} 5=4k+9 \rightarrow k=-1$

$y=-(x-2)^2+9=-(x^2-4x+4)+9=-x^2+4x+5 \xrightarrow{a+c=b} x=-1,\ x=5$



$\Rightarrow y>0 \rightarrow -(x-5)(x+1)>0$

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

$\rightarrow x\in(-1,5)$

$x^2 + mx - 2m = 0$ ، α , β ریشه‌های معادله

$\alpha^2 = -m\alpha + 2m$ ، $-m\beta = \beta^2 - 2m$, $\beta^2 = -m\beta + 2m$

$\alpha^2 - m\beta = 8 \to -m\alpha + 2m + \underbrace{\beta^2}_{-m\beta + 2m} - 2m = 8 \to -m\underbrace{(\alpha+\beta)}_{-m} + 2m = 8$ 7

$\to m^2 + 2m - 8 = 0 \to S = -2$

$\xrightarrow{\beta} \alpha\beta^2 - 7\beta + 9\beta = \alpha\beta^2 + 2\beta = 0 \to \beta(\alpha\beta + 2) = 0 \to \alpha\beta = -2$ ، $\alpha = \frac{-2}{\beta}$

$\xrightarrow{\alpha} \alpha^3 - 7\alpha + 9\beta = 0 \to \frac{-8}{\beta^3} + \frac{14}{\beta} + 9\beta = 0 \xrightarrow{\times\beta^3} -8 + 14\beta^2 + 9\beta^4 = 0$ 6

$\xrightarrow{\beta^2 = t} 9t^2 + 14t - 8 = 0 \to t^2 + 14t - 72 = 0 \to (t+18)(t-4) = 0$ ، $t = \frac{4}{9}$ ✓ ، $t = -2$ غ ق ق

$\to \beta^2 = \frac{4}{9} \to \beta \overset{\text{شرط}}{=} \frac{2}{3} \longrightarrow \frac{1}{\alpha} + \frac{1}{\beta} = \frac{S}{P} = \frac{\frac{-b}{a}}{\frac{c}{a}} = \frac{-b}{c} = \frac{+7}{6} = \frac{7}{6}$

$\frac{-\Delta}{4a} = 8 \to \frac{-(16 - 4(m)\overbrace{(\frac{m}{2}+7)}^{\frac{m^2}{2}+7m})}{4m} = 8 \to +2m^2 + 28m - 16 = 32m$

$\to 2m^2 - 4m - 16 = 0 \to m^2 - 4m - 32 = 0 \to (m-8)(m+4) = 0$ 8

$\to m = \frac{8}{2} = 4$ و $\frac{-4}{2} = -2 \to y = -2x^2 + 4x + 6 \xrightarrow{a+c=b} x = -1$ ، $x = 3 = k$

غ ق ق چون a منفی هست.

$y = k(x - x_S)^2 + y_S \to y = k(x-2)^2 + 6 \xrightarrow{y=4 , x=0} 4 = k(-2)^2 + 6 \to k = -\frac{1}{2}$

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

$\Rightarrow S = \frac{-b}{a} = \frac{-2}{-\frac{1}{2}} = 4 \to \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha+\beta}{\alpha\beta} = \frac{S}{P} = \frac{4}{-8} = -\frac{1}{2}$ 9

$P = \frac{c}{a} = \frac{4}{-\frac{1}{2}} = -8$

$x^2 - (4a+4)x + (3a^2 + 6a + 3) = 0 \xrightarrow{x=2} 4 - 8a - 8 + 3a^2 + 6a + 3 = 0$

$\to 3a^2 - 2a - 1 = 0 \to a^2 - 2a - 3 = 0 \to (a-3)(a+1) = 0 \quad \begin{cases} a = \frac{3}{3} = 1 \\ a = \frac{-1}{3} = -\frac{1}{3} \end{cases}$

$\xrightarrow{a=1} x^2 - 8x + 12 = 0 \to (x-2)(x-6) = 0 \to x = 6 , 2$ 10

$\xrightarrow{a=-\frac{1}{3}} x^2 - \frac{8}{3} + \frac{4}{3} = 0 \to 3x^2 - 8x + 4 = 0 \to x^2 - 8x + 12 = 0$ ، $x = \frac{6}{3} = 2$ ، $x = \frac{2}{3}$