Subject:
Date

(۲۰) تکلیف شماره ۱۳ میلاد امیری

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$\frac{-b}{2a}=2 \longrightarrow \frac{-1}{2(a-1)}=2 \Rightarrow 4-4a=1 \Rightarrow a=\frac{3}{4} \longrightarrow -\frac{1}{4}x^2+x+3 \xrightarrow{\times -4} x^2-4x-12=0$

$\Rightarrow (x+2)(x-6) \xrightarrow{+\text{طول}} x=6$ (۵)

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$f(x)=mx^2-5x+m$ $x_1 \quad x_2$: $- \; + \; -$

$1)\ \Delta>0 \Rightarrow 25-4m^2>0 \longrightarrow m^2<\frac{25}{4} \longrightarrow -\frac{5}{2}<m<\frac{5}{2}$

$2)\ m<0 \Rightarrow m=(-\frac{5}{2},0)$ (۵)

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$S=\frac{3-\sqrt5}{3}+\frac{3+\sqrt5}{3}=\frac{6}{3}=2 \qquad P=\frac{3-\sqrt5}{3}\times\frac{3+\sqrt5}{3}=\frac{9-5}{9}=\frac{4}{9}$

$x^2-Sx+P \longrightarrow x^2-2x+\frac{4}{9} \xrightarrow{\times 9} 9x^2-18x+4=0$ (۵)

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$S=\frac{-(-8)}{2}=4 \Rightarrow \alpha+\beta=4 \Rightarrow \beta=4-\alpha \qquad 3\alpha^2+\beta^2=12$

$3\alpha^2+(4-\alpha)^2-12=0 \longrightarrow 3\alpha^2+\alpha^2-8\alpha+16-12=4\alpha^2-8\alpha+4=0$

$\xrightarrow{\div 4} \alpha^2-2\alpha+1=0 \longrightarrow (\alpha-1)^2=0 \Rightarrow \alpha=1, \ \beta=4-1=3$ (۵)

$P=\frac{m+2}{2}=1\times 3 \Rightarrow m+2=6 \Rightarrow m=4$

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

$-1(x-2)^2+9=-x^2+4x-4+9=-x^2+4x+5 \longrightarrow -(x-5)(x+1)$

$f(x)\geq 0 \longrightarrow$ $-1 \quad 5$: $- \; + \; -$ $\Rightarrow (-1,5)$ (۵)

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$P=\alpha\beta=\frac{9\beta}{\alpha} \Rightarrow \alpha^2=9 \Rightarrow \alpha=\pm 3$

$\alpha=3 \longrightarrow 9+3\beta=7 \longrightarrow \beta=-\frac{2}{3}$ ✗

$\alpha=-3 \longrightarrow 9-3\beta=7 \longrightarrow \beta=\frac{2}{3}$ ✓ $\Rightarrow \alpha=-3, \ \beta=\frac{2}{3}$ (۵)

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

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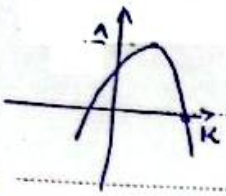
$x^2+mx-2m=0 \longrightarrow \alpha^2=2m-m\alpha \qquad \alpha^2-m\beta=2m-m(\alpha+\beta) \qquad S=\frac{-m}{1}=-m$ -۷

$\Rightarrow 2m-m(-m)=8 \longrightarrow m^2+2m-8=0 \Rightarrow (m-2)(m+4)=0 \qquad m=2,\ m=-4$

$m=2 \longrightarrow x^2+2x-4=0 \Rightarrow \Delta=4+16=20>0$ ✓

$m=-4 \longrightarrow x^2-4x+8=0 \Rightarrow \Delta=16-32=-16<0$ ✗

$m=2 \Rightarrow S=-(2)=-2$ (۵)



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① $\longrightarrow$ max $\Rightarrow m<0$ ② $\frac{-\Delta}{4a}=8 \longrightarrow \frac{-(16-4m(\frac{m}{2}+7))}{4m}=\frac{2m^2+28m-16}{4m}=8$

$\Rightarrow m^2+16m-8=16m \Rightarrow m^2-2m-8=0 \longrightarrow (m-4)(m+2)=0$ (۴)

$m=4,\ m=-2$

$1,2 \longrightarrow m=-2 \longrightarrow -2x^2+4x+4=0 \rightsquigarrow x^2-2x-3=0 \qquad (x-3)(x+1)=0$

$x=3,-1 \longrightarrow K=3$

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$y=a(x-2)^2+4 \longrightarrow 8=8a+4 \Rightarrow a=\frac{-1}{2} \Rightarrow y=\frac{-1}{2}x^2+2x-2+4$

$\Rightarrow y=x^2-4x-8 \qquad S=4 \qquad P=-8$ (۵)

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

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$x=2 \longrightarrow 4-8a-8+9a^2+4a+3=0 \Rightarrow 9a^2-2a-1=0 \longrightarrow a=1$

$(9-2-1=0) \qquad \searrow a=\frac{-1}{9}$

$\xrightarrow{1} x^2-8x+12=0 \xrightarrow{\Delta>0} (x-2)(x-6)=0 \qquad x=2,6$ (۵)

$\xrightarrow{-\frac{1}{9}} x^2-\frac{8}{9}x+\frac{4}{9}=0 \xrightarrow{\Delta>0} x=\frac{\frac{8}{9}\pm\frac{4}{9}}{2}$

$\Rightarrow x=6,\ x=\frac{2}{9}$