نام و نام خانوادگی: رزا معینی   شماره تکلیف: ۱۴   کلاس: کلاس ریاضی تیزهوشان گروه B دختر یازدهم

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۱)

$y=-x^2+bx+3$

$\frac{-\Delta}{4a}=7 \rightarrow \frac{b^2-4(-1)(3)}{-4(-1)}=\frac{b^2+12}{4}=7 \rightarrow b^2+12=28 \rightarrow b^2=16 \rightarrow b=4 \quad b=-4$

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۲) الف)

$f(x)=x^4+2x^2+3$

$x^2=t$

$t^2+2t+3=0 \rightarrow \Delta<0$ جواب ندارد

ب)

$f(x)=(4-x^2)^2-2(4-x^2)-15$

$4-x^2=t$

$t^2-2t-15=0 \rightarrow (t-5)(t+3)=0 \rightarrow t=-3=4-x^2 \rightarrow x=\pm\sqrt{7}$

$t=5=4-x^2 \rightarrow x^2=-1$ ندارد

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۳)

$\frac{-b}{a}=\frac{16}{4}=4$

$\alpha=\beta+2$

$\beta+2+\beta=4 \rightarrow \beta=1$

$\alpha+\beta$

$\beta=1=x \rightarrow 4-16+m=0 \rightarrow m=12$

در معادله $4x^2-16x+m=0$

$4x^2-16x+12=0 \rightarrow \Delta>0$ ✓

$4x^2-16x+12=0 \rightarrow x^2-4x+3=0 \rightarrow (x-1)(x-3)=0 \rightarrow x=3=\alpha \quad x=1=\beta$

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۴)

$\alpha+\beta=\frac{6}{3}=2 \rightarrow \alpha=2-\beta \xrightarrow{\beta=0} \alpha=2$

$2\alpha-\beta=4 \rightarrow 2(2-\beta)-\beta=4 \rightarrow 4-2\beta-\beta=4 \rightarrow \beta=0 \xrightarrow{\text{در معادله}} m-1=0 \rightarrow m=1$

$3x^2-6x=0 \rightarrow \Delta>0$ ✓

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۵)

$\frac{c}{a}=\frac{m^2-2}{-m}=1 \rightarrow m^2-2=-m \rightarrow m^2+m-2=0 \rightarrow (m+2)(m-1)=0 \rightarrow m=1 \rightarrow -x^2+4x-1=0 \rightarrow \Delta>0$ ✓

$m=-2 \rightarrow 2x^2+4x+2=0 \rightarrow \Delta=0$ ✗

CamScanner

۶)

$\frac{c}{a} = 3$

$3\beta \times \beta = 4 \rightarrow \beta = \frac{4}{3} \xrightarrow{\text{در معادله}} \frac{16}{9} - \frac{4}{3}m + 3 = 0 \rightarrow \boxed{m = \frac{43}{12}}$

$x^2 - \frac{43}{12} + 3 = 0 \rightarrow \Delta > 0$ ✓

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۷)

$\alpha = 3\beta$

$\frac{-b}{a} = 4 \rightarrow \alpha + \beta = 4 \rightarrow 4\beta = 4 \rightarrow \beta = 1 \xrightarrow{\text{در معادله}} 1 - 4 + m = 0 \rightarrow \boxed{m = 3}$

$x^2 - 4x + 3 = 0 \rightarrow \Delta > 0$ ✓

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۸)

$x^2 - 7x + 2 = 0 \qquad S = 7 \,/\, P = 2$

$\alpha^3 + \frac{8}{\alpha^3} = \underbrace{\left(\alpha + \frac{2}{\alpha}\right)}_{S=7}\underbrace{\left(\alpha^2 + \frac{4}{\alpha^2} - 2\right)}_{S^2 - 2P - 2 = 49 - 6 = 43} = 7 \times 43 = \boxed{301}$

$\alpha\beta = 2 \rightarrow \alpha = \frac{2}{\beta}$

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۹)

$h_{Max} = \frac{-\Delta}{4a} = \frac{b^2 - 4ac}{-4a} = \frac{2500}{40} = \boxed{62.5}$

$-10t^2 + 50t = 0 \rightarrow 10t(-t + 5) = 0 \rightarrow t = 0\ s \ ,\ t = 5\ s$

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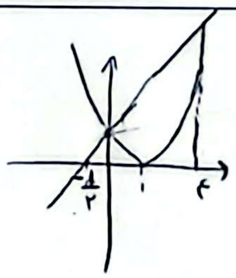
۱۰) الف)

$(x-1)^2 = 2x + 1$

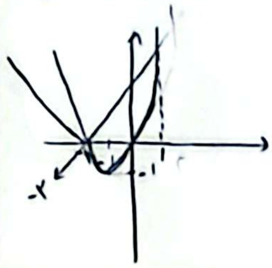


جواب ی شده دو

ب)

$x^2 + 2x = |x+2|$

$(x+1)^2 - 1 = |x+2|$



$x^2 + 2x = 0 \rightarrow x(x+2) = 0 \rightarrow x = -2 \ ,\ x = 0$

جواب ← ۲ تا