آمنه زرشک‌آبادی

۱)

$-x^2 + bx + 3$ $\quad \frac{-b}{-2} =$

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

$b^2 + 12$

$\frac{b^2+12}{-4} = 7 \quad -b^2 - 12 = -28 \quad \frac{28}{-12}{16}$

$16 = b^2$

$b = \pm 4$

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۲)

الف) $f(x) = x^4 + 2x^2 + 3$

$x^2 = t \quad t^2 - 2t + 3 = 0 \longrightarrow \Delta < 0$ ریشه ندارد.

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

$t^2 - 2t - 15 = 0 \quad 4 - x^2 = 5 \to -1 = x^2$ ✗

$(t-5)(t+3) = 0 \quad 4 - x^2 = -3 \longrightarrow 7 = x^2$

$x = \pm\sqrt{7}$

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۳)

$4x^2 - 16x + m = 0 \qquad \beta = \alpha + 2 \qquad \beta = 4$

$\alpha + \beta = 4 \qquad \alpha + 2 + \alpha$

$\alpha \cdot \beta = \frac{m}{4} \qquad 2\alpha + 2 = 4$

$2\alpha = 2$

$4 \times 2 = \frac{m}{4} \to m = 32 \qquad \alpha = 2$

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۴)

$3x^2 - 6x + m - 1 = 0 \qquad 2\alpha - \beta = 4$

$\beta = 2\alpha - 4$

$2\alpha - 4 + \alpha = \frac{6}{3} = 2 \qquad \to m = 0$

$3\alpha = \frac{4+2}{6}$

$\alpha = 2 \longrightarrow \beta = 0$

۵)

$-mx^2+4x+m^2-2=0$

$\frac{m^2-2}{-m}=1$

$\alpha=\frac{1}{\beta}$

$\alpha\cdot\beta=1$

$\frac{1}{\beta}\times\beta$

$m^2-2+m=0$

$(m+2)(m-1)=0$ → $\boxed{m=1}$ ، $m=-2$ غ ق ق

$1:\ -x^2+4x-1=0$ → $16-4(-1)(-1)>0$ ✓ $\Delta>0$

$2x^2+4x+2=0$

$x^2+2x+1=0$ → $\Delta<0$ ✗

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۶)

$x^2-mx+3=0$

$m=\frac{2}{\sqrt{\alpha}}+\alpha$

$\alpha\times\frac{2}{\sqrt{\alpha}}=3$

$\frac{2\alpha}{\sqrt{\alpha}}=3$

$\alpha\cdot\beta^2=4$

$\beta^2=\frac{4}{\alpha}$

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

$2\alpha=3\sqrt{\alpha}$

$4\alpha^2=9\alpha$ ، $\alpha=\frac{9}{4}$

$4\alpha=9$

$\frac{2}{\frac{3}{2}}+\frac{9}{4}$

$\frac{4}{3}+\frac{9}{4}$

$\Rightarrow m=\frac{16+27}{12}=\frac{43}{12}$

$\frac{\frac{3}{2}}{\frac{\sqrt{3}}{2}}$

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۷)

$\beta=3\alpha$

$\beta=3$

$x^2-4x+m=0$

$3\alpha+\alpha=4$ ، $\alpha=1$ ، $3\times1=$

$4\alpha=4$

$P=m\rightarrow\alpha\cdot\beta=3=m$

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۸)

$\alpha^3+\frac{8}{\alpha^3}$ ، $x^2-7x+2=0$

$\frac{1}{\alpha}=\frac{7-\alpha}{2}\Rightarrow\frac{2}{\alpha}=7-\alpha$

$\alpha+\frac{2}{\alpha}=\alpha+(7-\alpha)=7$

$\alpha^3+\left(\frac{2}{\alpha}\right)^3=\left(\alpha+\frac{2}{\alpha}\right)^3-3\alpha\cdot\frac{2}{\alpha}\cdot\left(\alpha+\frac{2}{\alpha}\right)$

$=7^3-6\times7=\boxed{301}$

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۹)

$\frac{-50}{-10\times2}=x\rightarrow\boxed{2/5}\rightarrow$ زمان

$y_{max}=-10\times2/5\times2/5+50\times2/5=\boxed{+62/5}$ ارتفاع

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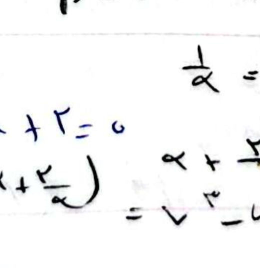
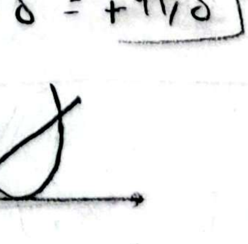
۱۰)

الف) $(x-1)^2=2x+1$



ب) $x^2+2x=|x+2|$



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

$x^2+x-2=0$

$(x+2)(x-1)=0$

-2 $\quad 1$