نیایش شاه نظری — یازدهم دختر — تکلیف کد ۱٤

① $y=-x^2+bx+3$ $\qquad y_{max}=\frac{-\Delta}{4a}=7$

$$\frac{-(b^2-4(-1)(3))}{-4}=\frac{b^2+12}{4}=7\to b^2=16$$

$$\boxed{b=\pm 4}$$

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② الف) $f(x)=x^4+2x^2+3 \to x^2=t \to t^2+2t+3=0$

$\Delta=4-4(3)=-8$ ✗ ← ریشه ندارد

ب) $f(x)=(4-x^2)^2-2(4-x^2)-15=0 \to 4-x^2=t$

$t^2-2t-15=0\to(t-5)(t+3)=0 \to t=-3 \to 4-x^2=-3$

$\boxed{x=\pm\sqrt{7}} \leftarrow 7=x^2$

$t=5 \to 4-x^2=5$

$x^2=-1$ ✗

تاریخ: / /

موضوع:

۳) α و β را ریشه‌ها در نظر می‌گیریم.

$4x^2-16x+m=0$

$\beta=\alpha+2 \qquad \alpha+\beta=\frac{16}{4}=4 \rightarrow 2\alpha+2=4$

$\boxed{\alpha=1}$

$\boxed{\beta=1+2=3}$

$\alpha\beta=\frac{m}{4}=1\times3=3 \rightarrow \boxed{m=12}$

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۴)

$3x^2-6x+m-1=0$

$2\alpha-\beta=4 \rightarrow \beta=2\alpha-4$

$\alpha+\beta=\frac{-(-6)}{3}=2 \rightarrow 3\alpha-4=2 \rightarrow \alpha=2$

$\beta=2\times2-4=0$

$\alpha\beta=\frac{m-1}{3}=0\times2=0 \rightarrow m-1=0 \rightarrow \boxed{m=1}$

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۵)

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

$\alpha=\frac{1}{\beta} \rightarrow \alpha\beta=1=\frac{m^2-2}{-m} \rightarrow m^2-2=-m$

$m^2+m-2=0 \rightarrow (m+2)(m-1)=0$

$m=-2 \times$

$\boxed{m=1}$

$m=-2 \rightarrow 2x^2+4x+2=0 \rightarrow x=-1$

دو ریشه متمایز ندارد ×

$\boxed{m=1} \rightarrow -x^2+4x-1=0 \rightarrow \Delta= \quad +4=20$

$x=\frac{-4\pm2\sqrt{5}}{-2} \rightarrow \boxed{x=\sqrt{5}+2}$

$\boxed{x=\sqrt{5}-2}$

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۶)

$x^2-mx+3=0$

$\alpha\beta^2=4 \rightarrow \underbrace{\alpha\beta}_{3}(\beta)=4 \rightarrow \beta=\frac{4}{3} \rightarrow \alpha\underbrace{(\beta)}_{\frac{4}{3}}=3 \rightarrow \alpha=\frac{3}{\frac{4}{3}}=\boxed{\frac{9}{4}}$

$$\left.\begin{array}{l}\alpha=\frac{9}{4}\\ \beta=\frac{4}{3}\end{array}\right\}\rightarrow \alpha+\beta=m=\frac{9}{4}+\frac{4}{3}=\frac{27+16}{12}=\boxed{\frac{43}{12}}$$

۷)

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

$\alpha=3\beta \rightarrow \alpha+\beta=4\rightarrow 4\beta=4\rightarrow \beta=1 \,,\, \alpha=3$

$$\boxed{\alpha\beta=m=3}$$

۸)

$x^2-7x+2=0 \xrightarrow{x=\alpha} \alpha^2-7\alpha+2=0\rightarrow \alpha^2+2=7\alpha$

$\alpha+\frac{2}{\alpha}=7$

$$\left(\alpha+\frac{2}{\alpha}\right)^3=\alpha^3+\frac{8}{\alpha^3}+\underbrace{3\alpha\left(\frac{2}{\alpha}\right)}_{6}\underbrace{\left(\alpha+\frac{2}{\alpha}\right)}_{7}=7\times7\times7=343$$

$$\alpha^3+\frac{8}{\alpha^3}=343-42=\boxed{301}$$

۹)

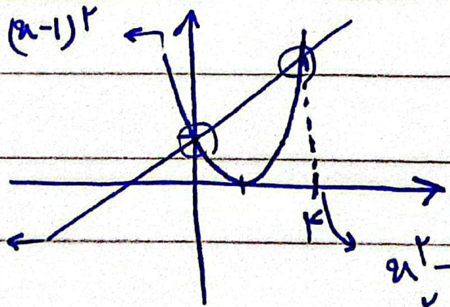
$h(t)=-10t^2+50t\rightarrow y_{max}\Rightarrow x_0=\frac{-50}{-20}=\frac{5}{2}$

$$-10\left(\frac{5}{2}\right)^2+50\left(\frac{5}{2}\right)=125-62.5=\boxed{62.5}$$

$y=-10x^2+50x=-10(x)(x-5)\rightarrow x=\boxed{5=t}$

۱۰)

الف) $(x-1)^2=2x+1$

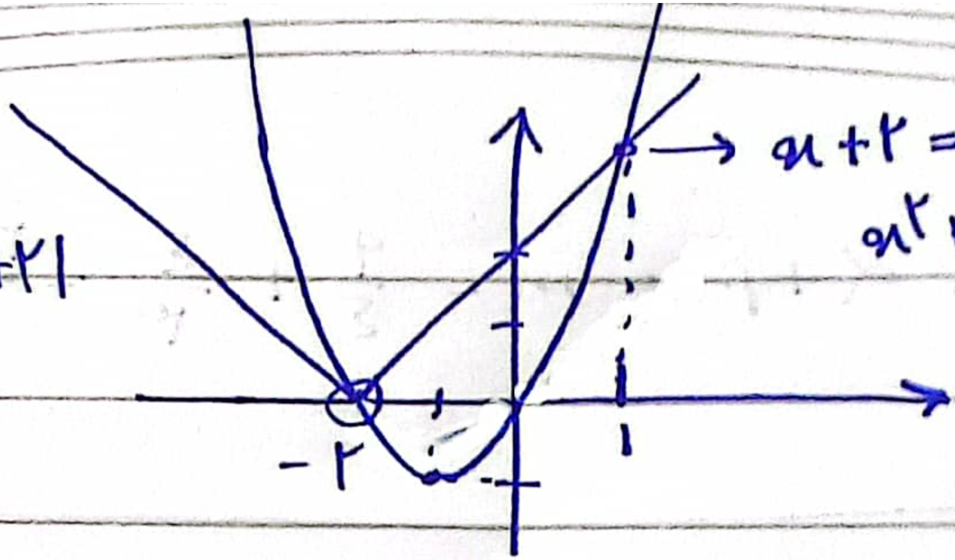


$x^2-2x+1=2x+1$

$x^2-4x=0 \rightarrow x=0 \,,\, x=4$

$\boxed{x=0,4}$

ب) $x^2+2x=|x+2|$



$x+2=x^2+2x \rightarrow x^2+x-2=0 \rightarrow x=-2 \,,\; x=1$

$\boxed{x=-2 \,،\, 1}$