۱۹٫۵

روژان صدرالطاهایی تکلیف ۱۴ یازدهم دختر C

۱- $y = -x^2 + bx + 3$

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

$b^2 + 12 = 7 \times 4 = 28 \quad b^2 = 16 \rightarrow \boxed{b = \pm 4}$

۲

۲- الف) $f(x) = x^4 + 2x^2 + 3 \quad x^2 = t$

$f(x) = t^2 + 2t + 3 = 0$ [ریشه ندارد]

$t = \frac{-2 \pm \sqrt{4 - 4(1)(3)}}{2} = -2 \pm \sqrt{-8}$ ✗

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

$4 - x^2 = t$

$f(x) = t^2 - 2(t) - 15 = 0$

$(t - 5)(t + 3) = 0$

$t = 5 \quad t = -3$

$4 - x^2 = 5 \quad -1 = x^2$ ✗

$4 - x^2 = -3 \quad 7 = x^2 \rightarrow \boxed{x = \pm\sqrt{7}}$

۲

۳- $4x^2 - 16x + m = 0$

$\alpha = 1 \quad \alpha + 2 = 3$

جمع $= 2\alpha + 2 = \frac{16}{4} = 4 \quad 2\alpha = 2 \; \boxed{\alpha = 1}$

ضرب $= \frac{m}{4} = 3 \rightarrow m = 12$

$4x^2 - 16x + 12 = 0$

$\Delta > 0$ ✓

۱٫۷۵

۴- $3x^2 - 6x + m - 1 = 0$

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

$\alpha + \beta = 2 \rightarrow \alpha + 2\alpha - 4 = 2 \rightarrow 3\alpha = 6 \; \boxed{\alpha = 2} \; \boxed{\beta = 0}$

ضرب $= \frac{m - 1}{3} = 0 \quad m = 1$

$3x^2 - 6x = 0 \quad \Delta > 0$ ✓

۱٫۷۵

۵- $-mx^2 + 4x + m^2 - 2 = 0 \quad \Delta > 0 \quad P = 1$

$P = 1 \rightarrow \frac{m^2 - 2}{-m} = 1 \quad m^2 + m - 2 = 0 \quad (m + 2)(m - 1) = 0$

$m = -2 \quad m = 1$

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

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

۲

۶- $x^2 - mx + 3 = 0$

$\frac{\alpha\beta^2 = 4}{\alpha\beta = 3} \quad \beta = \frac{4}{3}, \quad \alpha = \frac{\frac{3}{1}}{\frac{4}{3}} = \frac{9}{4}$

جمع $= m = \frac{9}{4} + \frac{4}{3} = \frac{27 + 16}{12} = \boxed{\frac{43}{12}}$

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

۲

۷-

$x^2 - 4x + m = 0$ $\quad \alpha \quad 3\alpha$ $\quad S = 4\alpha = 4 \quad \alpha = 1$

$P = m = 3\alpha^2 = 3 \times 1 = 3 \rightarrow \boxed{m = 3}$

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

۸-

$x^2 - 7x + 2 = 0$

$\alpha^2 + 2 = 7\alpha$

$\alpha^3 + \frac{8}{\alpha^3} = ?$ $\quad \left(\alpha + \frac{2}{\alpha}\right)^3 - 3(2)\left(\alpha + \frac{2}{\alpha}\right)$

$\left(\frac{\alpha^2+2}{\alpha}\right)^3 - 6\left(\frac{\alpha^2+2}{\alpha}\right) \rightarrow \left(\frac{7\alpha}{\alpha}\right)^3 - 6\left(\frac{7\alpha}{\alpha}\right) =$

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

۹-

$h(t) = -10t^2 + 50t$

$h_{max} = \frac{-\Delta}{4a} = \frac{-(50^2 - 4(-10)(0))}{4(-10)} = \frac{-2500}{-40} = \boxed{62.5}$ ارتفاع max

$0 = -10t^2 + 50t = 10t(-t + 5) = 0$

$t = 0$ یا $\boxed{5}$ ← زمان برخورد با زمین

۱۰-

الف) $(x-1)^2 = 2x + 1$

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

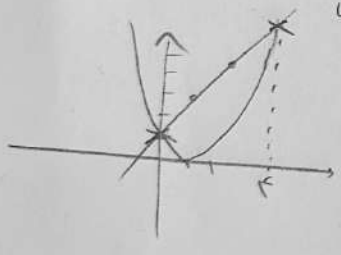
$x^2 - 4x = 0$

$x(x-4) = 0$

$x = 0$ یا $x = 4$

x	0	2	4
y	1	-3	9

در دو نقطه $(0,1)$ و $(4,9)$ هم برخورد می‌کنند.



ب) $x^2 + 2x = |x+2|$

$x(x+2)$

x	-2	0
y	0	2

در دو نقطه $(-2,0)$ و $(0,2)$ هم برخورد می‌کنند.