نام و نام خانوادگی: آرمین عظیمی   تصحیح: ۱۴   کلاس: نهم(؟) یازدهم ریاضی

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

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

$b^2 = 16 \rightarrow \boxed{b = 4} \rightarrow -x^2 + 4x + 3 \checkmark \; \Delta > 0$

$\boxed{b = -4} \rightarrow -x^2 - 4x + 3 \checkmark \; \Delta > 0$ ۱

الف) $f(x) = x^4 + 2x^2 + 3 \xrightarrow{x^2 = t} f(x) : t^2 + 2t + 3 = 0$

$\Delta = 4 - 12 < 0 \rightarrow$ $\boxed{\text{تابع ریشه ندارد}}$

$t =$ مقدار ندارد

$x^2 =$ مقدار ندارد $\rightarrow x =$ مقدار ندارد

ب) $f(x) = (4 - x^2)^2 - 2(4 - x^2) - 15 \xrightarrow{4 - x^2 = t} t^2 - 2t - 15 = (t - 5)(t + 3) = 0$ ۲

$t = 5 = 4 - x^2 \rightarrow x^2 = -1$ غ ق ق

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

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

$\alpha \,, \beta = \alpha + 2$

$\rightarrow S : 2\alpha + 2 = \frac{-b}{a} = \frac{16}{4} , 4 = 2\alpha + 2 \rightarrow 2\alpha = 2 \rightarrow \alpha = 1 \rightarrow f(1) = 0 \rightarrow 4 - 16 + m = 0$ ۳

$\boxed{m = 12}$

$\rightarrow 4x^2 - 16x + 12$

$x^2 - 4x + 3 \rightarrow (x - 3)(x - 1) \Rightarrow$ $\boxed{\text{ریشه: ۱ و ۳}}$

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

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

$\rightarrow S : \frac{-b}{a} = \alpha + 2\alpha - 4 = 3\alpha - 4 = \frac{6}{3} = 2 \rightarrow 3\alpha = 6 \rightarrow \underline{\alpha = 2} \rightarrow f(2) = 0$ ۴

$12 - 12 + m - 1 = 0$

$\boxed{m = 1}$

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

$\begin{cases} \Delta > 0 \\ P = 1 \rightarrow \frac{c}{a} = 1 \rightarrow \frac{m^2 - 2}{-m} = 1 \rightarrow m^2 - 2 = -m \end{cases}$

$m^2 + m - 2 = 0$

$(m + 2)(m - 1)$

$m = -2$

$m = 1$

$m = -2 \rightarrow y = +2x^2 + 4x + 2 \rightarrow +x^2 + 2x + 1 = (x + 1)^2 \; \times$ ۵

$\Delta = 0$ است ریشه مضاعف و متمایز نیست

$\boxed{m = 1} \rightarrow y = -x^2 + 4x - 1$

$\Delta > 0$ شرایط احراز $\checkmark$

$x^2 - mx + 3 = 0$

$\alpha\beta^2 = 4 \Rightarrow \underbrace{(\alpha\beta)}_{\frac{c}{a}=3}\beta = 4 \to 3\beta = 4$

$\beta = \frac{4}{3} \to f\left(\frac{4}{3}\right) = 0$ ۶

$\frac{16}{9} - \frac{4}{3}m + 3 = 0$

$\frac{4}{3}m = \frac{43}{9} \to m = \frac{43}{9} \times \frac{3}{4} = \boxed{\frac{43}{12} = m}$

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

$\beta = 3\alpha \quad , \alpha$

$S \to 3\alpha + \alpha = 4\alpha = \frac{-b}{a} = 4 \to 4\alpha = 4 \to \alpha = 1 \to f(1) = 0$

$1 - 4 + m = 0$ ۷

$\boxed{m = 3}$

$x^3 - 7x + 2 = 0$

$\alpha^3 + \frac{8}{\alpha^3}: \quad \alpha\beta = 2 \to \alpha = \frac{2}{\beta} \rightsquigarrow \alpha^3 + \frac{8}{\alpha^3} = \alpha^3 + \frac{8}{\left(\frac{2}{\beta}\right)^3} = \alpha^3 + \frac{8\beta^3}{8}$

$S = \frac{-b}{a} = 7$ ۸

$P = \frac{c}{a} = 2$

$= \alpha^3 + \beta^3 = S^3 - 3SP = (7)^3 - 3(2)(7)$

$= 343 - 42 = 301$

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

بیشترین ارتفاع $= \frac{-\Delta}{4a} = \frac{-(2500)}{-40} = \boxed{62.5}$

زمانی که توپ به زمین برخورد می‌کند $= h = 0 \xrightarrow{\text{ریشه‌گذاری}} h(t) = 10t(-t+5)$ ۹

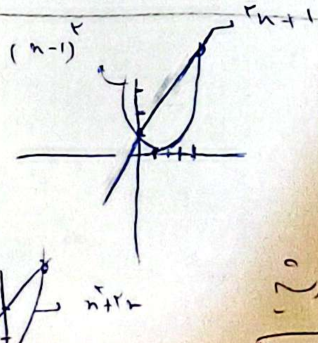
$\boxed{t = 5}$

$t = 0$

الف) $(x-1)^2 = 2x+1 \rightsquigarrow x^2 - 2x + 1 = 2x + 1$

$\frac{-b}{2a} = \frac{2}{2} = 1$

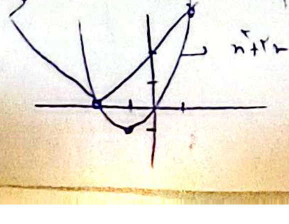
$f(1) = 1 - 2 + 1 = 0$ ۱۰



۲ ریشه

$\boxed{x = 0}$

$\boxed{x = 4}$



۲ ریشه

$\boxed{x = -2}$

$\boxed{x = 1}$

ب) $x^2 + 2x = |x+2|$

$\frac{-b}{2a} = \frac{-2}{2} = -1 \quad f(-1) = 1 - 2 = -1$