نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..۱۴.. کلاس .....

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$$y_s = \frac{-\Delta}{4a} = \frac{4ac-b^2}{4a} = \frac{-12-b^2}{-4}\cdot\frac{12+b^2}{4} = 7 \Rightarrow b^2 = 16 \Rightarrow b = \pm 4$$

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الف) $f(x) = x^4 + 2x^2 + 3 \xrightarrow{x^2=t} t^2+2t+3=0 \Rightarrow \Delta = b^2-4ac = 4-12 = -8 < 0 \Rightarrow$ معادله جواب ندارد

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

- $t = -3 \Rightarrow 4-x^2 = -3 \Rightarrow x^2 = 7 \Rightarrow x = \pm\sqrt{7}$
- $t = 5 \Rightarrow 4-x^2 = 5 \Rightarrow x^2 = -1 \rightarrow$ غ ق ق

۳

$$\left.\begin{array}{l} S = \frac{-b}{a} = \frac{-12}{-4} = 4 = \alpha+\beta \\ \beta = \alpha+2 \end{array}\right\} \Rightarrow 2\alpha+2 = 4 \Rightarrow 2\alpha = 2 \Rightarrow \alpha = 1,\ \beta = 3$$

$$P = \frac{c}{a} = \frac{m}{4} = \alpha\beta \Rightarrow 1\times 3 = 3 = \frac{m}{4} \Rightarrow m = 12$$

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

۴

$$S = \alpha+\beta = \frac{-b}{a} = -\frac{-6}{3} = 2 \Rightarrow \left.\begin{array}{l} \alpha+\beta = 2 \\ 2\alpha-\beta = 4 \end{array}\right\} \Rightarrow 3\alpha = 6 \Rightarrow \alpha = 2,\ \beta = 0$$

$$P = \frac{c}{a} = \alpha\beta = 2\times 0 = 0 = \frac{m-1}{3} \Rightarrow m-1 = 0 \Rightarrow m = 1$$

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$$\left.\begin{array}{l} \alpha = \frac{1}{\beta} \\ P = \alpha\beta = \frac{c}{a} = \frac{m^2-2}{-m} \end{array}\right\} \Rightarrow \frac{1}{\beta}\times\beta = \frac{m^2-2}{-m} \Rightarrow m^2-2 = -m \quad m^2+m-2 = 0 \Rightarrow (m+2)(m-1) = 0$$

- $m = 1 \rightarrow -x^2+4x-1 = 0$, $\Delta > 0$ ق ق
- $m = -2 \rightarrow 2x^2+4x+2 = 0$, $\Delta = 0$ غ ق ق

$m = 1$

۶

$$P = \frac{c}{a} = \alpha\beta = 3,\quad \alpha\beta^2 = 4 \;\Big\}\Rightarrow \frac{1}{\beta} = \frac{3}{4} \Rightarrow \beta = \frac{4}{3},\quad \alpha\beta = 3 \Rightarrow \alpha = \frac{9}{4}$$

$$S = \frac{-b}{a} = \alpha+\beta = m,\quad \alpha+\beta = \frac{9}{4} + \frac{4}{3} = \frac{43}{12} \;\Big\}\Rightarrow m = \frac{43}{12}$$

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$$\alpha = 3\beta,\quad S = \alpha+\beta = \frac{-b}{a} = 4 \;\Big\}\Rightarrow 4\beta = 4 \Rightarrow \beta = 1,\quad \alpha = 3$$

$\alpha = 3\beta$

$$P = \frac{c}{a} = m = \alpha\beta = 1\times 3 \Rightarrow m = 3$$

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$$P = \frac{c}{a} = \alpha\beta = 2 \Rightarrow \beta = \frac{2}{\alpha} \Rightarrow \beta^3 = \frac{8}{\alpha^3}$$

$$S = \frac{-b}{a} = 7,\quad P = \frac{c}{a} = 2$$

$$\alpha^3 + \frac{8}{\alpha^3} = \alpha^3 + \beta^3 = S^3 - 3SP = 343 - 42 = 301$$

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$$h(t) = -10t^2 + 50t = -10(t^2 - 5t) = -10t(t-5) \overset{h(t)=0}{\Longrightarrow} -10t(t-5) = 0$$

$t = 5$ لحظهٔ برخورد توپ به زمین

$$y_s = \frac{-\Delta}{4a} = \frac{4ac - b^2}{4a} = \frac{0 - 2500}{-40} = \frac{2500}{40} = \frac{250}{4} = 62.5$$

ارتفاع ماکسیمم توپ

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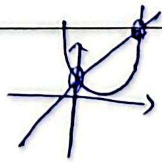
الف) $(x-1)^2 = 2x+1 \Rightarrow x^2 - 2x + 1 - 2x - 1 = x^2 - 4x = 0$ → $x = 0$ ، $x = 4$



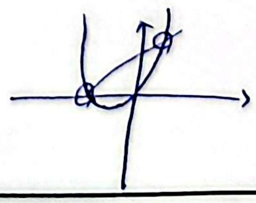
ب) $x^2 + 2x = |x+2|$

	-2	
$-x-2$		$x+2$

$x \geq -2 \Rightarrow x^2 + 2x = x + 2 \Rightarrow x^2 + x - 2 = 0$ → $x = 1$ ، $x = -2$

$x < -2 \Rightarrow x^2 + 2x = -x - 2 \Rightarrow x^2 + 3x + 2 = 0$ → $x = -1$ ، $x = -2$

$\Rightarrow x = -2$



$\Longrightarrow x = 1,\ x = -2$