

$$\frac{-A}{Fa} = v \rightarrow \frac{-b^2 + (5)(-1)(3)}{-1} \rightarrow -b^2 - 15 = -18 \Rightarrow -b^2 + 14 = 0$$

$$b^2 = 14 \Rightarrow b = \pm \sqrt{14}$$

$$y = -x^2 - 5x + 3 \rightarrow b^2 - 4ac = 14 - (5)(-1)(3) = 14 + 15 = 29 > 0$$

$$y = -x^2 + 5x + 3 \rightarrow b^2 - 4ac = 14 - (5)(-1)(3) = 14 + 15 = 29 > 0$$

$$\text{الف } f(x) = x^2 + 2x^2 + 4 \rightarrow t = x^2 \Rightarrow t^2 + 2t + 4 = 0 \rightarrow \Delta < 0$$

$$\text{ب } f(x) = (x - x^2)^2 - 2(x - x^2) - 15 \rightarrow x - x^2 = t \Rightarrow t^2 - 2t - 15 = 0$$

$$(t - 5)(t + 3) \rightarrow t = 5, -3$$

$$x - x^2 = 5 \Rightarrow x^2 = -1 \quad \text{ج د ع}$$

$$x - x^2 = -3 \Rightarrow x^2 = 4 \Rightarrow x = \pm \sqrt{4}$$

$$fx^2 - 1/x + m = 0 \quad \alpha + \beta = \frac{1}{f} = 1 \Rightarrow \alpha + \alpha + 1 = 1 \Rightarrow 2\alpha = 0 \Rightarrow \alpha = 0$$

$$\alpha + \beta = 1 \quad \alpha \beta = \frac{m}{f} \Rightarrow 1 = \frac{m}{f} \Rightarrow m = 1 \quad \beta = 1$$

$$fx^2 - 4x + m - 1 = 0 \quad \alpha + \beta = \frac{4}{f} \Rightarrow \alpha + \beta = 4 \Rightarrow \alpha = 4 - \beta$$

$$4\alpha - \beta = 1 \Rightarrow 4(4 - \beta) - \beta = 1 \Rightarrow 16 - 4\beta - \beta = 1 \Rightarrow 15 = 5\beta \Rightarrow \beta = 3$$

$$\alpha \beta = \frac{m-1}{f} = 0 \Rightarrow m-1 = 0 \Rightarrow m = 1$$

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$$\beta = 3 \Rightarrow \alpha = 1$$

$$-mx^2 + 5x + 4x^2 - 1 = 0 \Rightarrow \alpha, \beta = \frac{1}{f}, \beta = 1 \Rightarrow \frac{m^2 - 1}{m} = 1 \Rightarrow m^2 - 1 = m \Rightarrow m^2 + m - 1 = 0$$

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

$$\Delta = b^2 - 4ac \Rightarrow 14 - (5)(-1)(3) = 14 + 15 = 29 > 0$$

$$m = -1 \rightarrow 5(-1)^2 - 1(-1) + 4 = 0 \Rightarrow \Delta = 0 \quad \text{ج د ع}$$

$$m = 1 \rightarrow 5 - 1 + 4 = 0 \Rightarrow 14 > 0 \quad \text{ج د ع}$$

$$m = 1$$

$$x^2 - mx + 4 = 0 \Rightarrow \alpha \beta = 4 \Rightarrow \alpha = \frac{4}{\beta}$$

$$\alpha \beta = 4 \Rightarrow \frac{4}{\beta} \beta = 4 \Rightarrow 4 = 4 \Rightarrow \beta = 4, \alpha = 1$$

$$\alpha + \beta = m \Rightarrow \frac{4}{4} + \frac{4}{1} = 1 + 4 = 5 = m$$

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

$$\Rightarrow \alpha + \beta = \sqrt{3} \rightarrow \sqrt{3}\beta + \beta = \sqrt{3} \Rightarrow \beta = 1 \Rightarrow \sqrt{3}\beta = \sqrt{3}$$

$$\alpha = \sqrt{3} \quad \sqrt{3} + 1 = \sqrt{3} \Rightarrow \underline{\underline{m = \sqrt{3}}}$$

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$$x^2 - \sqrt{3}x + \sqrt{3} = 0 \rightarrow x^2 - \sqrt{3}x + \sqrt{3} = 0 \Rightarrow \alpha + \sqrt{3} + \frac{\sqrt{3}}{\alpha} = 0 \Rightarrow \alpha + \frac{\sqrt{3}}{\alpha} = -\sqrt{3}$$

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$$\alpha^3 + \frac{\sqrt{3}}{\alpha^3} = \frac{(\alpha + \frac{\sqrt{3}}{\alpha})^3 - (3\alpha + \frac{\sqrt{3}}{\alpha}(\alpha + \frac{\sqrt{3}}{\alpha}))}{(-\sqrt{3})^3 - (3\sqrt{3}\sqrt{3}(-\sqrt{3}))} \Rightarrow \alpha^3 + \frac{\sqrt{3}}{\alpha^3} = -\sqrt{3}\sqrt{3} + \sqrt{3} = -\sqrt{3}$$

$$h_{max} = \frac{-\Delta}{4a} \Rightarrow \frac{-(\omega_0)^2 + (5)(-10)(-1)}{-50} = \frac{-1000}{-50} = 20 \text{ m}$$

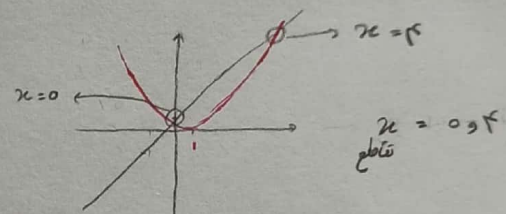
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$$-10t^2 + \omega_0 t = 0 \Rightarrow t(-10t + \omega_0) = 0 \rightarrow t = \omega_0 \text{ s } \checkmark$$

$$t = 0 \text{ s } \times$$

$$a) (x-1)^2 = 2x+1 \Rightarrow x^2 - 2x + 1 = 2x + 1$$

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



10

$$b) x^2 + 2x = |x+2|$$

$$x(x+2) = 0 \rightarrow x = 0, -2$$

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

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

$$x < -2 \rightarrow -x-2 = x^2 + 2x \Rightarrow x^2 + 3x + 2 = 0 \rightarrow x = -1, -2$$

$$x = -1, -2$$

