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$$y = -u^2 + 6u + 12 \rightarrow -\frac{\Delta}{2a} = 12 \rightarrow -\Delta = 28a \rightarrow -(6^2 - 4(-1)(12)) \rightarrow -6^2 - 12 = 28(-1) \rightarrow 6^2 + 12 = 28 \rightarrow 6 = \pm 2$$

$$f(u) = u^2 + 2u^2 + 3 \rightarrow \Delta < 0 \rightarrow \text{ریشه ندارد} \checkmark$$

$$f(u) = (u - u^2)^2 - 2(u - u^2) - 10 \rightarrow u - u^2 = t \rightarrow t^2 - 2t - 10 \rightarrow (t - 1)(t + 3) = 0 \\ t = 1 \rightarrow u - u^2 = 1 \rightarrow u^2 - u + 1 = 0 \rightarrow \Delta = 1 - 4 = -3 < 0 \rightarrow \text{ریشه ندارد} \checkmark$$

$$u^2 - 13u + m = 0 \quad a = b + 2 \quad P = \frac{c}{a} = \frac{m}{u} = 6(b + 2) \rightarrow \frac{m}{u} = 6(1 + 2) \rightarrow m = 18 \checkmark \\ S = b + 2 + b \rightarrow 2b + 2 = \frac{13}{2} = \frac{-b}{a} = \frac{-b}{2b + 2} \rightarrow 2b + 2 = \frac{13}{2} \rightarrow 4b + 4 = 13 \rightarrow 4b = 9 \rightarrow b = \frac{9}{4} \rightarrow m = 18 \checkmark$$

$$3u^2 - 5u + m - 1 = 0 \quad a - b = 2 \rightarrow b = a - 2 \rightarrow S = -\frac{b}{a} = \frac{5}{3} = \frac{2a - 2}{3} = \frac{2a - 2}{3} \rightarrow 3a - 2 = 5 \rightarrow 3a = 7 \rightarrow a = \frac{7}{3} \rightarrow b = \frac{1}{3} \rightarrow m = 1 \checkmark$$

$$-u^2 + 5u + m^2 - 2 = 0 \rightarrow \frac{c}{a} = 1 \rightarrow \frac{m^2 - 2}{-1} = 1 \rightarrow m^2 - 2 = -1 \rightarrow m^2 + m - 2 = 0 \rightarrow (m - 1)(m + 2) = 0 \\ m = 1 \text{ or } m = -2 \checkmark$$

$$u^2 - mu + 3 = 0 \rightarrow a + b = 2 \rightarrow a = \frac{2}{b} \rightarrow \frac{c}{a} = \frac{3}{\frac{2}{b}} = \frac{3b}{2} \rightarrow \frac{3b}{2} = 2 \rightarrow b = \frac{4}{3} \rightarrow a = \frac{3}{2} \rightarrow m = \frac{4}{3} \checkmark$$

$$u^2 - 9u + m = 0 \quad b = 3a \quad S = a + 3a = 4a = -\frac{b}{a} = -\frac{3a}{a} = -3 \rightarrow a = 1 \rightarrow b = 3 \rightarrow m = 9 \checkmark$$

$$u^2 - 7u + 2 = 0 \quad a^2 + \frac{1}{a^2} = 5 \rightarrow (a + \frac{1}{a})^2 = 5 + 2 = 7 \rightarrow a + \frac{1}{a} = \pm \sqrt{7} \rightarrow a^2 \pm \sqrt{7}a + 1 = 0 \rightarrow \Delta = 7 - 4 = 3 \rightarrow a = \frac{-\sqrt{7} \pm \sqrt{3}}{2} \checkmark$$

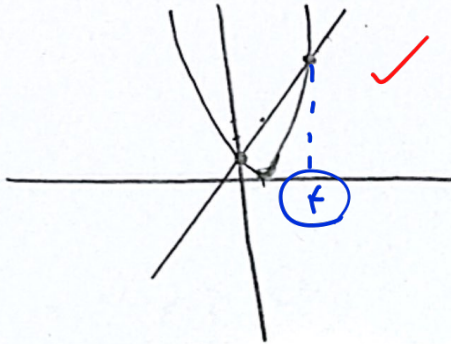
$$h(t) = -10t^2 + 80t + \frac{1}{2}at^3 \rightarrow -\frac{b}{2a} = \frac{80}{-20} = -4 \rightarrow -10(-4)^2 + 80(-4) + \frac{1}{2}a(-4)^3 = 0 \rightarrow -160 - 320 - 32a = 0 \rightarrow -480 - 32a = 0 \rightarrow a = -15 \checkmark$$

در صفر شروع

(1, 5)

الف) $(n-1)^2 = 2n+1 \rightarrow$ $\frac{n}{0} \frac{1}{1} \frac{2}{4} \frac{3}{9}$

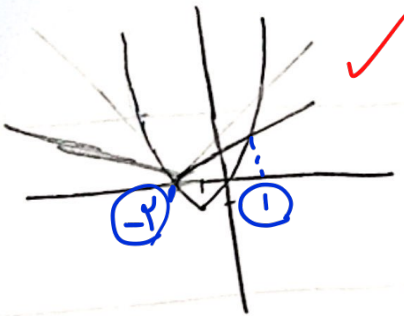
۲ ریشه دارد



$n = 0, 4$

ب) $n^2 + 2n = (n+2)^2$

$(n+1)^2 - 1$



۲ ریشه دارد

$n = -2, 1$