

افزین!

$$u^2 + u + 1 = 0 \Rightarrow \Delta = 1 \Rightarrow \alpha = \frac{-1 \pm \sqrt{1}}{2} \Rightarrow \alpha = 0 \text{ or } -1$$

$$\alpha = 0 \Rightarrow \beta = \frac{c}{u} \Rightarrow \beta = \frac{c}{0} \Rightarrow \beta \text{ is undefined}$$

$$\alpha = -1 \Rightarrow \beta = \frac{c}{-1} = -c$$

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$$\beta = \frac{c}{u} \Rightarrow \beta = \frac{c}{-1} = -c \Rightarrow \beta = -1 \Rightarrow 1 - (-1) = 2 \checkmark$$

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$$u^2 + (m+1)u + 1 = 0 \Rightarrow \frac{1}{u} + \frac{1}{u} = -2 \Rightarrow \frac{u+1}{u^2} = -2 \Rightarrow u^2 + u + 1 = 0$$

$$(u+1)^2 = \frac{1}{u^2} \Rightarrow u^2 + 2u + 1 = \frac{1}{u^2} \Rightarrow u^4 + 2u^3 + u^2 - 1 = 0$$

$$\Rightarrow -\frac{b}{a} = \frac{1}{u^2} \Rightarrow \frac{m+1}{u^2} = \frac{1}{u^2} \Rightarrow m+1 = 1 \Rightarrow m = 0$$

$$\Rightarrow -m^2 + m + 1 = 0 \Rightarrow \frac{c}{a} = -1 \checkmark$$

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$$u^2 + (u^2 - 9)u - 2 = 0 \Rightarrow u^3 + u^2 - 9u - 2 = 0 \Rightarrow (u+2)(u^2 - 7u - 1) = 0$$

$$u = -2 \Rightarrow \beta = \frac{c}{u} = \frac{1}{-2} = -\frac{1}{2}$$

$$u^2 - 7u - 1 = 0 \Rightarrow u = \frac{7 \pm \sqrt{49+4}}{2} = \frac{7 \pm \sqrt{53}}{2}$$

$$\Rightarrow \beta = \frac{c}{u} = \frac{1}{\frac{7 \pm \sqrt{53}}{2}} = \frac{2}{7 \pm \sqrt{53}}$$

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$$u^2 + 4u + u = 0 \Rightarrow u^2 + 5u = 0 \Rightarrow u(u+5) = 0 \Rightarrow u = 0 \text{ or } -5$$

$$u = 0 \Rightarrow \beta = \frac{c}{u} \Rightarrow \beta \text{ is undefined}$$

$$u = -5 \Rightarrow \beta = \frac{c}{-5} = -\frac{c}{5}$$

$$\Rightarrow \beta = -\frac{c}{5} \Rightarrow \beta = -\frac{1}{5} \Rightarrow \frac{c}{a} = -\frac{1}{5} \checkmark$$

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$$u^2 - 11u - 1 = 0 \Rightarrow u = \frac{11 \pm \sqrt{121+4}}{2} = \frac{11 \pm \sqrt{125}}{2}$$

$$\Rightarrow u = \frac{11 \pm 5\sqrt{5}}{2}$$

$$\Rightarrow \beta = \frac{c}{u} = \frac{1}{\frac{11 \pm 5\sqrt{5}}{2}} = \frac{2}{11 \pm 5\sqrt{5}}$$

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$$P_0 u^P + c u - 4 = 0 \quad (d+\beta) \quad 9 \quad P_0 u^P - u u + b = 0 \quad (d+\alpha d) \quad \beta + 1/d$$

$$\Rightarrow d + \beta = -\frac{u}{P_0} \Rightarrow d + \beta = -\frac{1}{P_0} \Rightarrow d + 1/d + \beta + 1/d \Rightarrow d + \beta + 1 \Rightarrow -\frac{1}{P_0} + 1 = \frac{1}{P_0} \Rightarrow d + \beta + 1 = \frac{2}{P_0}$$

$$\Rightarrow \frac{u}{P_0} = \frac{1}{P_0} \Rightarrow \boxed{\alpha = 1} \Rightarrow P_0 u^P + u - 4 = 0 \Rightarrow \frac{c}{u} = d\beta = -3 \Rightarrow (d+1/d)(\beta+1/d) = d\beta + 1/d d + 1/d \beta + 1/d^2$$

$$\Rightarrow -3 + 1/d(-1/P_0) + 1/d^2 = -3 \Rightarrow \frac{c}{u} = \frac{b}{P_0} = -3 \Rightarrow \boxed{b = -9} \checkmark$$

$$\Rightarrow \frac{ab}{\epsilon} \Rightarrow -\frac{9}{\epsilon} = -112 \Rightarrow [-112] = -9 \checkmark$$

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$$u u^P - u u - b = 0 \Rightarrow \epsilon_0 \beta^P + P_0 u^P + P_0 \beta = 1 \Rightarrow d + \beta = 1 \Rightarrow d = 1 - \beta$$

$$\Rightarrow \epsilon_0 \beta^P + P_0(1 - \beta^P) - P_0 \beta = 1 \Rightarrow \epsilon_0 \beta^P + P_0 - \epsilon_0 \beta^P + P_0 \beta - P_0 \beta = 1 \Rightarrow 4\epsilon_0 \beta^P - 4\epsilon_0 \beta + P_0 = 1$$

$$\Rightarrow 4\epsilon_0 \beta^P - 4\epsilon_0 \beta + 4 = 0 \Rightarrow \epsilon_0 \beta^P - \epsilon_0 \beta + 1 = 0 \Rightarrow \Delta = \sqrt{4\epsilon_0} = 2\sqrt{\epsilon_0} \Rightarrow \beta = \frac{1}{4} \pm \sqrt{\epsilon_0}$$

$$d = \frac{1}{4} \pm \sqrt{\epsilon_0} \quad (\text{نظرًا لأن } \epsilon_0 \text{ صغير جدًا}) \Rightarrow d + \beta = \frac{1}{4} + \sqrt{\epsilon_0} + \frac{1}{4} - \sqrt{\epsilon_0} \Rightarrow |d - \beta| \Rightarrow \frac{P_0 \sqrt{\epsilon_0}}{5} \checkmark$$

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$$u^P - (u+1)u + b = 0 \Rightarrow d + \beta \Rightarrow P_0 u^P + P_0 u + P_0 \beta = 1 \Rightarrow d + \beta = (P_0 u + 1)/(P_0 u + 1) \Rightarrow \epsilon u = u + 1 \Rightarrow u = \epsilon u - 1$$

$$(P_0 u + 1)(P_0 u + 1) = \epsilon u^P - 1 = \alpha \Rightarrow \epsilon u^P - 1 = \epsilon u - 1 \Rightarrow \epsilon u^P - \epsilon u = 0 \Rightarrow u(u - 1) = 0 \Rightarrow u = 0 \text{ or } u = 1 \checkmark$$

$$\boxed{\alpha = 1} \checkmark \Rightarrow u^P - (P_0 u + 1)u + b = 0 \Rightarrow d + \beta = P_0 u + P_0 \beta \Rightarrow d + \beta = P_0 u + P_0 \beta = \epsilon u + 1 \Rightarrow P_0 u + 1$$

$$\Rightarrow \alpha = 1 \Rightarrow \epsilon u + 1 = 0 \Rightarrow m = 1 \Rightarrow d + \beta = \epsilon u + 1 \Rightarrow \epsilon u + 1 = 0 \Rightarrow |u - b| = |1 - \epsilon u| \leq 1 \checkmark$$

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$$u^P + u - 1 - m^P = 0 \Rightarrow u^P + u - (1 + m^P) = 0 \Rightarrow d + \beta = -1 \quad d\beta = -1 - m^P$$

$$\Rightarrow (d + \beta)^P = 1 \Rightarrow d^P + \beta^P + P_0 \beta = 1 \Rightarrow d^P + \beta^P - P_0 \beta = 1 \Rightarrow d^P + \beta^P - P_0 \beta = 1$$

$$\Rightarrow P_0 \beta \geq 0 \Rightarrow m \leq 0 \Rightarrow \boxed{d + \beta^P = 1} \checkmark$$

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$$A(y) : B(-\partial y) \Rightarrow \alpha \omega^P = 1 \Rightarrow d + \beta^P = 1 \Rightarrow \frac{P_0 + (-d)}{P_0} = -1 \Rightarrow \frac{d + \beta}{P_0} = -1 \Rightarrow d + \beta = -P_0$$

$$d^P + \beta^P = 1 \Rightarrow (d + \beta)^P = d^P + \beta^P + P_0 \beta = 1 \Rightarrow P_0 \beta = -1 \Rightarrow d\beta = -1 \Rightarrow d\beta = -\frac{1}{P_0} \Rightarrow y = \alpha(u - d)(u - \beta)$$

$$1 = y(-1) = \alpha(-1 - d)(-1 - \beta) \Rightarrow (-1 - d)(-1 - \beta) = \left(\frac{\beta - d}{P_0}\right)\left(\frac{d - \beta}{P_0}\right) = -\frac{(d - \beta)^2}{\epsilon}$$

$$(d - \beta)^P = (d + \beta)^P - \epsilon d\beta = \epsilon + 1 = 4 \Rightarrow 1 = -\alpha \frac{4}{\epsilon} \Rightarrow \alpha = -\frac{P_0}{4} \Rightarrow y(0) = \left(-\frac{P_0}{4}\right)\left(-\frac{1}{P_0}\right) = \frac{1}{4}$$

$$\Rightarrow \boxed{C(0, \frac{1}{4})} \checkmark$$

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