

$$\begin{aligned} 4u^p - v u + q\beta &= 0 \Rightarrow u^p - \frac{v}{4}u + \frac{q\beta}{4} = 0 \Rightarrow v\beta \leq \frac{q\beta}{4} \Rightarrow v \leq \frac{q}{4} \Rightarrow v^p \leq \frac{q}{4} \Rightarrow v = \pm \sqrt[4]{q} \\ \Rightarrow v = -\sqrt[4]{q} \Rightarrow \beta > 0, v = \sqrt[4]{q} \Rightarrow \beta < 0 \Rightarrow v = -\sqrt[4]{q} \Rightarrow -v + \frac{v}{4} + q\beta &= 0 \Rightarrow \beta = \frac{q}{4} \\ \frac{1}{v} + \frac{1}{\beta} &\Rightarrow -\frac{1}{\sqrt[4]{q}} + \frac{q}{4} \Rightarrow -\frac{1}{4} + \frac{q}{4} = \frac{v}{4} \end{aligned}$$

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$$\begin{aligned} u^p + m u - p m &= 0 \Rightarrow v^p - m\beta = \lambda \Rightarrow v^p - m v - m\beta - \lambda = 0 \Rightarrow v^p - m(v + \beta) - \lambda = 0 \Rightarrow v^p - m(-m) - \lambda = 0 \\ v^p + m^2 - \lambda &= 0 \Rightarrow m^p + v^p - \lambda = 0 \Rightarrow (m + v)(m - v) = 0 \Rightarrow \begin{matrix} m = -v \\ \text{or } m = v \end{matrix} \\ m = v \Rightarrow \Delta > 0 \Rightarrow m = v \Rightarrow u^p + v u - \lambda &= 0 \Rightarrow \lambda = -\frac{b}{a} \Rightarrow -\frac{v}{1} = -v \\ m = -v \Rightarrow \Delta < 0 \end{aligned}$$

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$$\begin{aligned} m u^p + \xi u + \frac{m+1}{v} &\Rightarrow -\frac{p}{\xi u} \leq \lambda \Rightarrow -\Delta \leq p m \Rightarrow -((4 - \xi(m))(\frac{m+1}{v})) \leq p m \\ \Rightarrow -4 + \xi(m)(\frac{m+1}{v}) &= p m \Rightarrow -\xi + m(\frac{m+1}{v}) = \lambda m \Rightarrow \frac{-\lambda + m^p + \xi m}{v} = \lambda m \\ \Rightarrow m^p + (\xi m - \lambda) &= 4 m \Rightarrow m^p - v m - \lambda = 0 \Rightarrow (m - v)(m + v) = 0 \Rightarrow m = v \text{ or } m = -v \\ \Rightarrow -v u^p + \xi u + 4 &= 0 \Rightarrow -u^p + v u + 4 = 0 \Rightarrow u^p - v u - 4 = 0 \Rightarrow (u - v)(u + v) = 0 \Rightarrow u = v \text{ or } u = -v \\ \boxed{u = v} \end{aligned}$$

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$$\begin{aligned} a u^p + b u + c &= 0 \Rightarrow a = v \Rightarrow \xi u + \Gamma b + c = 4 \Rightarrow c = \xi \Rightarrow \xi u + \Gamma b \leq p \Rightarrow v u + b = 1 \\ -\frac{b}{v u} &= p \Rightarrow \xi u = -b \Rightarrow b = v \quad a = -\frac{1}{v} \Rightarrow -b + p b \leq p \Rightarrow b \leq p \quad \text{از این شرط } b \text{ را می توانیم بدست آوریم} \\ -\frac{1}{v} u^p + v u + \xi &= 0 \Rightarrow \frac{1}{v} + \frac{1}{p} = \frac{v + p}{v p} = \frac{s}{p} \Rightarrow \frac{-\frac{1}{v}}{-\frac{1}{p}} \Rightarrow \frac{\xi}{\lambda} = \boxed{\frac{1}{v}} \end{aligned}$$

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$$\begin{aligned} u^p - (\xi u + \xi) u + (v u^p + 4 u + p) &= 0 \Rightarrow u = v \Rightarrow \xi - \lambda u - \lambda + v u^p + 4 u + p = 0 \\ \Rightarrow v u^p - v u - \lambda &= 0 \Rightarrow \boxed{u = 1} \quad u = -\frac{1}{v} \Rightarrow u^p - \lambda u + p = 0 \Rightarrow (u - v)(u - 4) = 0 \\ u = v \quad \boxed{u = 4} \end{aligned}$$

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