

$$\alpha + \alpha q + \alpha q^2 = 1 \rightarrow \alpha(1+q+q^2) = 1$$

$$\alpha \times \alpha q \times \alpha q^2 = q^3 \rightarrow \alpha^3 q^3 = q^3 \rightarrow \alpha^3 = 1 \rightarrow \alpha = \sqrt[3]{1} = 1$$

14.10.20

$$\frac{q}{q} \times \frac{F}{q} (1+q+q^2) = 1$$

$$F(1+q+q^2) = 1$$

$$F + Fq + Fq^2 = 1 \rightarrow Fq^2 - 1/q + 1q + F = 0 \rightarrow q^2 - 1/q + 1q + F = 0$$

$$\begin{cases} q = \frac{1}{F} = F & \leftarrow (q-1/q)(q-1) \\ q = \frac{1}{F} \end{cases}$$

$$q > 0$$

$$x_1^p + F/x_1^p + x_1^p - 1$$

$$x_1^p = x_1^p + F/x_1^p$$

$$(1/x_1)^p = (x_1^p + F/x_1^p)$$

$$F/x_1^p = x_1^p + F/x_1^p - 1 \rightarrow x_1^p - 1/x_1^p - 1 = 0 \rightarrow x_1^p = 1$$

$$y^p - 1/y - 1 = 0$$

$$(y - 1/y)(y + 1/y) = 0 \rightarrow y = -1/y \rightarrow y^2 = -1 \rightarrow y = \pm i$$

$$\checkmark \text{ if } x = 1 \rightarrow z_1 = 1 \quad z_2 = i \quad z_3 = -i$$

$$\times \text{ if } x = -1 \rightarrow z_1 = 1 \quad z_2 = -i \quad z_3 = i$$

$$\alpha = 1$$

$$q = \frac{1}{F}$$

$$\alpha_1 = 1/F$$

$$1 + q + q^2 + q^3 + q^4 = \frac{1}{1} \rightarrow \alpha + \alpha q + \alpha q^2 + \alpha q^3 + \alpha q^4 = 1$$

$$1/F - 1 = \alpha^3 \rightarrow \frac{1/F}{1} = 1 \rightarrow \alpha = 1$$

$$A = 1/F$$

$$B = 1$$

$$A + B = 1$$

$$1 + 1/F = 1 \rightarrow 1/F = 0$$

$$1/F = 0 \rightarrow \frac{1}{F} = 0$$

$$1/F = 0 \rightarrow \frac{1}{F} = 0$$

$$q = -1$$

$$A + B = -1 + 1 = 0$$

$$\frac{-1}{F} - \frac{1}{F} = \frac{1}{F} = 1 \rightarrow F = 1$$

$$z_{101} = -1/F + (1/F) = 1$$

$$1/F = 1 \rightarrow \frac{1}{F} = 1$$

$$\alpha_p = \alpha_f = \alpha_c = \alpha_a = \alpha_v = \alpha_\lambda = \alpha_q$$

9
1, 10

$$\alpha_m = \alpha_v = \alpha_q$$

$$\alpha_1 + 12d, \alpha_1 + 9d, \alpha_1 + 1d$$

$$(\alpha_1 + 12d) \times (\alpha_1 + 1d) = \alpha_1^2 + 10d\alpha_1 + 12d^2$$

$$(\alpha_1 + 9d)^2 = \alpha_1^2 + 18d\alpha_1 + 81d^2$$

$$18\alpha_1 d + 81d^2 - \alpha_1^2 - 10d\alpha_1 = 0 \Rightarrow \alpha_1^2 = 10d\alpha_1 + 71d^2$$

$$\begin{aligned} \alpha_1 + 12d - \alpha_1 - 1d & \quad \times \frac{1}{11} \\ \alpha_1 + 9d - \alpha_1 - 12d & \quad \times \frac{1}{11} \\ \alpha_1 + 1d - \alpha_1 - 9d & \quad \times \frac{1}{11} \end{aligned}$$

$d=0$
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$$-10d, -9d, -1d \Rightarrow +1 \quad d=1$$

$$\alpha_p = \alpha_1 + d$$

$$\alpha_f = \alpha_1 + 12d$$

$$\alpha_\lambda = \alpha_1 + 1d$$

$$(\alpha_1 + 12d)^2 = \alpha_1^2 + 24d\alpha_1 + 144d^2$$

$$(\alpha_1 + d)(\alpha_1 + 1d) = \alpha_1^2 + 11d\alpha_1 + 1d^2$$

$$q = \frac{\alpha_1 + 12d}{\alpha_1 + d} = \frac{12d}{1d} = 12 - 11q = 12$$

$$\alpha_{11} = \alpha_1 q^9 = \frac{1}{11} \times 12^9 = 12^9$$

$$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \dots$$

$$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \dots$$

$$r(\alpha_1 r^2) = r^2 \alpha_1 r = r^2 \alpha_1 r^2$$

$$r = 12$$

دستگاه غیر ثابت

$$r^2 - 12r^2 + 12r = 0 \Rightarrow r^2 = 12r + 12$$

$$r = 12, r = 1$$

$$r^2 - 12r + 12 = (r - 12)(r - 1)$$

$$P \frac{V}{P} = 0 \quad \rightarrow \quad d = \frac{-1}{P}$$

$$\alpha_P = P - \frac{P}{P} = 0 \quad \rightarrow \quad \alpha_P + K$$

$$\alpha_L = P - \frac{V}{P} = \frac{-1}{P} \quad \rightarrow \quad \alpha_L + K$$

$$\alpha_{1P} = P - \frac{P}{P} = -1 \quad \rightarrow \quad \alpha_{1P} + K$$

$$\text{Sub into } \alpha_{1P} + K, \alpha_L + K, \alpha_P + K$$

$$(\alpha_L + K)^P = \alpha_L^P + K^P + PK \alpha_L - \gamma K^P + \frac{1}{P} K + \frac{1}{1Q}$$

$$(\alpha_{1P} + K)(\alpha_P + K) - \gamma(K-1)(K + \frac{0}{P}) = K^P + \frac{1}{P} K - \frac{0}{P}$$

$$\frac{1}{1Q} + \frac{1}{P} K = \frac{1}{P} K - \frac{0}{P} - \gamma \frac{1}{P} K = -\frac{0}{P}$$

$$\frac{1}{P} K = \frac{-P}{1Q} \quad \boxed{K = -\frac{P}{1Q}} = -0 < 1$$

$$\frac{\alpha_L + K}{\alpha_P + K} = \frac{\frac{-1}{P} - \frac{P}{P}}{\frac{0}{P} - \frac{P}{P}} = \frac{\frac{-P}{P}}{\frac{-1}{P}} = \frac{-P}{-1Q} = \sqrt{\frac{P}{1Q}}$$