삼차방정식의 근과 계수의 관계 (Vieta's Formula in Cubic Equations)





Let



Let α



Let α , β



Let α,β , γ



Let α,β , γ be the roots





$$ax^3 + bx^2 + cx + d = 0$$



$$ax^3 + bx^2 + cx + d = 0 \ (a \neq 0)$$



Let α , β , γ be the roots of the equation.

$$ax^3 + bx^2 + cx + d = 0 \ (a \neq 0)$$

 α



$$ax^3 + bx^2 + cx + d = 0 \ (a \neq 0)$$

$$\alpha +$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta +$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta + \gamma =$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta + \gamma = -\frac{b}{a}$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
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$$\alpha\beta$$



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$$\alpha\beta$$
 +



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta + \gamma = -\frac{b}{a}$$

$$\alpha\beta + \beta\gamma$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta + \gamma = -\frac{b}{a}$$

$$\alpha\beta + \beta\gamma +$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta + \gamma = -\frac{b}{a}$$

$$\alpha\beta + \beta\gamma + \gamma\alpha =$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
$$\alpha + \beta + \gamma = -\frac{b}{a}$$
$$\alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a}$$



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$$\alpha\beta\gamma$$



$$ax^{3} + bx^{2} + cx + d = 0 \ (a \neq 0)$$
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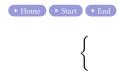
$$\alpha \beta \gamma = -$$



$$ax^3 + bx^2 + cx + d = 0 \ (a \neq 0)$$
 $\alpha + \beta + \gamma = -\frac{b}{a}$
 $\alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a}$ Proof
 $\alpha\beta\gamma = -\frac{d}{a}$









$$\begin{cases} (x-\alpha)(x-\beta)(x-\gamma) = 0 \end{cases}$$

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$$\begin{cases} x^3 & - \end{cases}$$

$$\begin{cases} (x - \alpha)(x - \beta)(x - \gamma) &= 0\\ ax^3 + bx^2 + cx + d &= 0 \quad (a \neq 0) \end{cases}$$

$$\begin{cases} x^3 - (\alpha + \beta + \gamma) \end{cases}$$

$$\begin{cases} (x - \alpha)(x - \beta)(x - \gamma) &= 0\\ ax^3 + bx^2 + cx + d &= 0 \quad (a \neq 0) \end{cases}$$

$$\begin{cases} x^3 - (\alpha + \beta + \gamma) x^2 \end{cases}$$

$$\begin{cases} (x - \alpha)(x - \beta)(x - \gamma) &= 0\\ ax^3 + bx^2 + cx + d &= 0 \quad (a \neq 0) \end{cases}$$

$$\begin{cases} x^3 - (\alpha + \beta + \gamma) x^2 + \frac{1}{2} (x + \gamma) x^2 + \frac{1}{2} (x$$

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$$\begin{cases} \alpha + \beta \end{cases}$$

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$$\alpha\beta\gamma &= -\frac{d}{a}$$

Github:

https://min7014.github.io/math20210207001.html

Click or paste URL into the URL search bar, and you can see a picture moving.