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

Start End

Start End

Let

Start End

Let α

Let α, β

▸ Start ▸ End

Let α, β , γ

Start End

Let α, β , γ be the roots

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Proof

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

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

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

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

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

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

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$$\begin{cases} x^3 - (\alpha+\beta+\gamma)\,x^2 + (\alpha\beta+\beta\gamma+\gamma\alpha)x - \alpha\beta\gamma = 0 \\ \end{cases}$$

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$$\begin{cases} x^3 & - & (\alpha+\beta+\gamma)\,x^2 & + & (\alpha\beta+\beta\gamma+\gamma\alpha)x & - & \alpha\beta\gamma & = & 0 \\ x^3 & + & \dfrac{b}{a} \end{cases}$$

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

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$$\begin{cases} \alpha+\beta+\gamma = -\dfrac{b}{a} \\ \\ \\ \end{cases}$$

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

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