DEFINITIONS

Greek letters

How to say them, and what they usually mean.

24 definitions **1** subtopics By Lucas Potrykus

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HOW TO USE THIS

Each definition gives the exact meaning of a word or symbol. Where there is a symbol, it is shown next to the name, with how to say it out loud. Most definitions have a short example.

Learn definitions word for word: in proofs and in exams, the precise wording is what earns the marks.

Searchable online, with links to every topic, at lemmamathematics.com/definitions.

THE GREEK ALPHABET

Alpha

α

SAY *"al-fa"*

Angles; significance level; roots of polynomials (α, β, γ).

More in **Roots of polynomials and series**

Beta

β

SAY *"bee-ta"*

Second angle or second root.

Gamma

γ, Γ

SAY *"gam-a"*

Third root; Euler–Mascheroni constant $\gamma \approx 0.577$; capital Γ is the gamma function, which extends factorials: $\Gamma(n) = (n-1)!$.

Delta

δ, Δ

SAY *"del-ta"*

A small change (δx); a total change (Δ); the discriminant; the δ in ε–δ definitions.

Epsilon

ε

SAY *"ep-si-lon"*

A small positive number, especially in limits: "for every $\varepsilon > 0$ there is a $\delta > 0$ …". Also errors.

Zeta

ζ

SAY *"zee-ta"*

The Riemann zeta function, $\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s}$, with $\zeta(2) = \frac{\pi^2}{6}$.

Eta

η

SAY *"ee-ta"*

Efficiency in mechanics; a spare variable.

Theta

θ

SAY *"thee-ta"*

The most common letter for an angle; the angle in polar coordinates (r, θ).

More in **Trigonometry**

Iota

ι

SAY *"eye-oh-ta"*

Rarely used in school mathematics; it is the letter behind the word "jot".

Kappa

κ

SAY *"cap-a"*

Curvature of a curve; some physical constants.

Lambda

λ

SAY *"lam-da"*

Parameter of a line; eigenvalues; the Poisson rate.

More in **Vectors**

Mu

μ

SAY *"myoo"*

Population mean; coefficient of friction; second line parameter.

Nu

ν

SAY *"nyoo"*

Degrees of freedom in statistics. Easy to confuse with v.

Xi

ξ

SAY *"ksy" or "zai"*

The universal set in British books; a spare variable.

Omicron

o, O

SAY *"oh-mi-cron"*

Almost never used, because it looks exactly like the letter o.

Pi

π, Π

SAY *"pie"*

The circle constant π; capital Π for products.

Rho

ρ

SAY *"row"*

Population correlation; density.

Sigma

σ, Σ

SAY *"sig-ma"*

Standard deviation σ; capital Σ for sums.

Tau

τ

SAY *"tor" or "tow"*

Torque; time constants. Some argue for $\tau = 2\pi$ as the "true" circle constant.

Upsilon

υ, Υ

SAY *"oop-si-lon"*

Rarely used; capital Υ appears occasionally in physics.

Phi

ϕ, Φ

SAY *"fie"*

Angles; the golden ratio $\phi = \frac{1+\sqrt{5}}{2}$; capital Φ for the standard normal distribution function.

Chi

χ

SAY *"kie"*

The χ^2 (chi-squared) test and distribution.

Psi

ψ

SAY *"sigh" or "psy"*

Angles; the wavefunction in quantum mechanics.

Omega

ω, Ω

SAY *"oh-meg-a"*

Angular speed; roots of unity; capital Ω for a sample space (or ohms).

Spotted a mistake, or a definition that should be here? Email lpotry31@gmail.com. More at lemmamathematics.com.