

IRRATIONAL NUMBERS

Mathematics Reference Sheet

Definition: An irrational number is a real number that **cannot** be expressed as a simple fraction (ratio). Its decimal form never ends (non-terminating) and never settles into a repeating pattern (non-recurring).

Famous Constants

Pi (π)	$3.14159...$
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Euler's (e)	$2.71828...$
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Phi (ϕ)	$1.61803...$
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Square Roots

Non-perfect squares are always irrational.

$\sqrt{2}$	$1.41421...$
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$\sqrt{3}$	$1.73205...$
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$\sqrt{5}$	$2.23606...$
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Key Properties

- Cannot be written as $\frac{p}{q}$
- Infinite decimal expansion
- No periodic repetition

Visual Examples

Irrational:
 $0.1011011101111...$

Rational (for contrast):
 $0.333... (1/3)$

Educational Resource â€” Classroom Poster Template