

Exponential Functions

9th Grade

Growth that multiplies rather than adds — and why it always wins.

LINEAR

- Add the same amount each step
- $y = mx + b$
- Constant difference
- Graph is a straight line
- Grows steadily forever

EXPONENTIAL

- Multiply by the same factor each step
- $y = a \cdot b^x$
- Constant ratio
- Graph curves upward sharply
- Overtakes any linear function eventually

THE DIFFERENCE THAT MATTERS

Check the differences: constant difference means linear, constant ratio means exponential.

$b > 1$ is growth. $0 < b < 1$ is decay. b is never negative in these functions.