



## Linear vs. Nonlinear Functions

### Today's Standard

8.F.A3 - Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function  $A = s^2$  giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.

Cues	Notes
What is a linear function?	A linear function is defined by the equation $y = mx + b$ , where $m$ and $b$ are constants.
How do you identify a linear function?	A linear function can be identified by its graph, which is a straight line.
Examples of nonlinear functions	Examples of nonlinear functions include quadratic functions ( $y = x^2$ ), exponential functions, and logarithmic functions.
Why is it important to distinguish between linear and nonlinear functions?	Distinguishing between linear and nonlinear functions is important because it helps in understanding different types of relationships and behaviors in mathematics and real-world scenarios.

### Summary

Linear functions are represented by the equation  $y = mx + b$  and have graphs that are straight lines. Nonlinear functions include quadratic, exponential, and logarithmic functions, which do not form straight lines. Understanding the difference is crucial for analyzing various mathematical and real-world situations.