

Georgia Department of Education
 Georgia Standards of Excellence Framework
 GSE Algebra I • Unit 5

Compare / Contrast: Linear, Quadratic, and Exponential Functions

Show similarities and differences between linear, quadratic, and exponent functions:
 What things are being compared? How are they similar? How are they different?

Attribute	Linear Functions	Quadratic Functions	Exponential Functions
Rate of change	• constant • all positive, negative, or 0	• variable • both positive + negative which switch at vertex	• variable • all positive or all negative but increasing along the graph.
Domain & Range	D: All real #'s R: All real #'s	D: all real #'s R: limited by vertex (=)	D: all real #'s R: limited by asymptote (≠)
Intercepts	Always have x and y intercepts	Always have y int. and either 0, 1, or 2 x-intercepts	Always have y-int and either 0 or 1 x-int.
Asymptotes	none	none	Yes, same as vertical shift
End Behavior	• opposite • always one $+\infty$ and one $-\infty$	• same • both $+\infty$ or both $-\infty$	• one is along asymptote • one is either $+\infty$ or $-\infty$

$f(x) = 2x + 3$

Functions to Graph and Discuss:

$f(x) = 2x^2 + 3$

$f(x) = 2^x + 3$