

Unit 3: Derivatives

Vocabulary and notation

$f'(x)$	$\frac{df}{dx}(a)$	$\frac{d}{dx}(\dots) _{x=a}$	difference quotient
$f''(x)$	$\frac{d^2f}{dx^2}$	differentiable	one-sided differentiable
linear operator	marginal effect	second derivative	point of inflection
secant line			

Skills

- Write a derivative as a limit
- Capture word problem information involving derivatives
- Graph the derivative of a function whose graph you are given
- Estimate a derivative from a partial lookup table
- Logical implications between differentiability and continuity
- Compute derivatives from first principles for simple cases: constant, linear, $f(x) := x^2$.
- Units of the derivative
- Use information about f and its first two derivatives to sketch its graph
- Relation between second derivative, concavity and points of inflection
- Equation for a tangent line in terms of the derivative