Chapter 1

Higher Derivatives

Higher derivatives are derivatives of derivatives. For instance, if y' is the derivative of y', then y'' is the derivative of y'.

Table 1.1: All the different notations for higher derivates

y'	$\frac{d}{dx}y$	$\frac{dy}{dx}$	Dy
y''	$\left(\frac{d}{dx}\right)^2 y$	$\frac{d^2y}{dx^2}$	D^2y
y'''	$\left(\frac{d}{dx}\right)^3 y$	$\frac{d^3y}{dx^3}$	D^3y
$y^{(4)}$	$\left(\frac{d}{dx}\right)^4 y$	$\frac{d^4y}{dx^4}$	D^4y
$y^{(n)}$	$\left(\frac{d}{dx}\right)^n y$	$\frac{d^ny}{dx^n}$	D^ny

Higher derivatives are pretty straightforward — just keep taking the derivative!