

Item	Differential calculus	Difference calculus
Definition	$Df(x) = f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$	$\Delta f(x) = f(x+1) - f(x)$
Higher order	$D^n f(x) = f^{(n)}(x) = D(D^{n-1}f(x))$	$\Delta^n f(x) = \Delta(\Delta^{n-1}f(x))$
Rules		
Sum	$D(f(x) + g(x)) = Df(x) + Dg(x)$	$\Delta(f(x) + g(x)) = \Delta f(x) + \Delta g(x)$
Difference	$D(f(x) - g(x)) = Df(x) - Dg(x)$	$\Delta(f(x) - g(x)) = \Delta f(x) - \Delta g(x)$
Product	$D\{f(x) \cdot g(x)\} = (Df(x)) \cdot g(x) + f(x) \cdot Dg(x)$	
Quotient	$D \frac{f(x)}{g(x)} = \frac{g(x)Df(x) - f(x)Dg(x)}{[g(x)]^2}$	
Chain	$Df(g(x)) = f'(g(x)) \cdot g'(x)$	
Functions		
Ordinary powers	$Dx^n = nx^{n-1}$	
Factorial powers	$Dx^{\underline{n}} =$	
Exponential	$Db^x = (\ln(b))b^x$	
Logarithm	$D \log_b(x) = \frac{1}{\ln(b)} \cdot \frac{1}{x}$	
Harmonic sequence		$\Delta H_x =$