

FORMULA SHEET

$$R_N = \sum_{j=1}^N f(a + j\Delta x)\Delta x$$

$$L_N = \sum_{j=0}^{N-1} f(a + j\Delta x)\Delta x$$

$$\sum_{j=1}^N j = \frac{N^2}{2} + \frac{N}{2}$$

$$\sum_{j=1}^N j^2 = \frac{N^3}{3} + \frac{N^2}{2} + \frac{N}{6}$$

$$\sum_{j=1}^N j^3 = \frac{N^4}{4} + \frac{N^3}{2} + \frac{N^2}{4}$$

$$\frac{d}{dx} \sin x = \cos x$$

$$\frac{d}{dx} \cos x = -\sin x$$

$$\frac{d}{dx} \tan x = \sec^2 x$$

$$\frac{d}{dx} \csc x = -\csc x \cot x$$

$$\frac{d}{dx} \sec x = \sec x \tan x$$

$$\frac{d}{dx} \cot x = -\csc^2 x$$

$$\frac{d}{dx} e^x = e^x$$

$$\int \frac{1}{x} dx = \ln |x| + C$$

$$\int \tan x dx = \ln |\sec x| + C$$

$$(f^{-1}(x))' = \frac{1}{f'(f^{-1}(x))}$$

$$\frac{d}{dx} a^x = a^x \ln(a)$$

$$\frac{d}{dx} \log_a(x) = \frac{\ln x}{\ln a}$$

$$\frac{d}{dx} \arcsin x = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx} \arctan x = \frac{1}{1+x^2}$$