Table of integrals

$$\int u\,dv = u\,v - \int v\,du \qquad \int a^u\,du = \frac{a^u}{\ln a} + C$$

$$\int \sec^2 u\,du = \tan u + C \qquad \int \csc^2 u\,du = -\cot u + C$$

$$\int \sec u \tan u\,du = \sec u + C \qquad \int \csc u \cot u\,du = -\csc u + C$$

$$\int \frac{du}{\sqrt{a^2 - u^2}} = \sin^{-1}\frac{u}{a} + C \qquad \int \frac{du}{a^2 + u^2} = \frac{1}{a}\tan^{-1}\frac{u}{a} + C$$

Curves in 3-space

unit tangent vector	$\mathbf{T}(t) = \dfrac{\mathbf{r}'(t)}{\lvert\mathbf{r}'(t)\rvert}$
unit normal vector	$\mathbf{N}(t) = \dfrac{\mathbf{T}'(t)}{\lvert\mathbf{T}'(t)\rvert}$
unit binormal vector	$\mathbf{B}(t) = \mathbf{T}(t) \times \mathbf{N}(t)$
curvature	$\kappa(t) = \dfrac{\lvert\mathbf{r}'(t) \times \mathbf{r}''(t)\rvert}{\lvert\mathbf{r}'(t)\rvert^3}$

Mass and center of mass (2-D case)

$$m = \iint_D \rho(x,y)\,dA$$

$$\bar{x} = \frac{1}{m}\iint_D x\rho(x,y)\,dA$$

$$\bar{y} = \frac{1}{m}\iint_D y\rho(x,y)\,dA$$

Trigonometry

$$\sin(-\theta) = -\sin\theta \qquad \cos(-\theta) = \cos\theta$$

$$\tan(-\theta) = -\tan\theta \qquad \sin(\pi/2 - \theta) = \cos\theta$$

$$\cos(\pi/2 - \theta) = \sin\theta \qquad \tan(\pi/2 - \theta) = \cot\theta$$

$$\sin 2x = 2\sin x \cos x \qquad \cos 2x = \cos^2 x - \sin^2 x = 2\cos^2 x - 1 = 1 - 2\sin^2 x$$