$\sin(0) = 0$ ;  $\sin(\pi/6) = 1/2$ ;  $\sin(\pi/4) = \sqrt{2}/2$ ;  $\sin(\pi/3) = \sqrt{3}/2$ ;  $\sin(\pi/2) = 1$
$\cos(0) = 1$ ;  $\cos(\pi/6) = \sqrt{3}/2$ ;  $\cos(\pi/4) = \sqrt{2}/2$ ;  $\cos(\pi/3) = 1/2$ ;  $\cos(\pi/2) = 0$

$$\cos^2 x + \sin^2 x = 1 \; ; \quad 1 + \tan^2 x = \sec^2 x \; ; \quad 1 + \cot^2 x = \csc^2 x$$

$$\sin(2x) = 2 \sin x \cos x \; ; \quad \cos(2x) = \cos^2 x - \sin^2 x$$

$$\cos^2 x = \tfrac{1}{2}\left(1 + \cos(2x)\right) \; ; \quad \sin^2 x = \tfrac{1}{2}\left(1 - \cos(2x)\right)$$

$$\sin A \cos B = \tfrac{1}{2}[\sin(A - B) + \sin(A + B)]$$

$$\sin A \sin B = \tfrac{1}{2}[\cos(A - B) - \cos(A + B)]$$

$$\cos A \cos B = \tfrac{1}{2}[\cos(A - B) + \cos(A + B)]$$

$$\int \sec x \, dx = \ln|\sec x + \tan x| + C \; ; \quad \int \csc x \, dx = -\ln|\csc x + \cot x| + C$$

If $T_N$, $M_N$, $S_N$ are the Trapezoidal, Midpoint and Simpson's approximations, then

$$T_N = \frac{\Delta x}{2}[f(x_0) + 2f(x_1) + 2f(x_2) + \cdots + 2f(x_{N-2}) + 2f(x_{N-1}) + f(x_N)] \; ;$$

$$M_N = \Delta x[f(c_1) + f(c_2) + \cdots + f(c_N)] \text{ where } c_j = (x_{j-1} + x_j)/2 \; ;$$

$$S_N = \frac{\Delta x}{3}[f(x_0) + 4f(x_1) + 2f(x_2) + 4f(x_3) + \cdots + 2f(x_{N-2}) + 4f(x_{N-1}) + f(x_N)] \; .$$

If $I = \int_a^b f(x) \, dx$ then

$$|T_N - I| \leq \frac{K_2(b - a)^3}{12N^2} \; , \quad |M_N - I| \leq \frac{K_2(b - a)^3}{24N^2} \; , \quad |S_N - I| \leq \frac{K_4(b - a)^5}{180N^4} \; .$$

The length of the curve $y = f(x)$, $a \leq x \leq b$ is equal to $\int_a^b \sqrt{1 + (f'(x))^2} \, dx$.
The area of the surface obtained by rotating the curve $y = f(x)$, $a \leq x \leq b$ about the $x$-axis is equal to $\int_a^b 2\pi f(x)\sqrt{1 + (f'(x))^2} \, dx$.
The length of the parametric curve $(x(t), y(t))$, $a \leq t \leq b$ equals $\int_a^b \sqrt{(x'(t))^2 + (y'(t))^2} \, dt$.
If a curve is given in polar form by $r = f(\theta)$ then the area bounded by $r = f(\theta)$, $\theta = \alpha$ and $\theta = \beta$ is $\int_\alpha^\beta \tfrac{1}{2}r^2 \, d\theta = \int_\alpha^\beta \tfrac{1}{2}(f(\theta))^2 \, d\theta$.

Newton's Law of Cooling is given by $\frac{dT}{dt} = -k(T - T_0)$, where $T$ is the temperature and $T_0$ is the ambient temperature. The balance $P$ in an annuity is given by $\frac{dP}{dt} = r(P - N/r)$, where $r$ is the interest rate and $N$ is the rate of withdrawal.

The $n$th Taylor polynomial of $f(x)$ with center $a$ is $T_n(x) = \sum_{k=0}^{n} \frac{f^{(k)}(a)}{k!}(x - a)^k$

If $|f^{(n+1)}(u)| \leq K$ for all $u$ between $a$ and $x$, then $|f(x) - T_n(x)| \leq K\frac{|x - a|^{n+1}}{(n+1)!}$

$$(1 + x)^a = 1 + ax + \frac{a(a - 1)}{2!}x^2 + \frac{a(a - 1)(a - 2)}{3!}x^3 + \cdots \quad \text{if} \quad |x| < 1$$