"Tentative" means I might add more formulas but of course I will not erase anything that is already here.

\[
\begin{align*}
\cos(2x) &= \cos^2 x - \sin^2 x \\
\sin(2x) &= 2 \sin x \cos x \\
\cos^2 x &= \frac{1 + \cos(2x)}{2} \\
\sin^2 x &= \frac{1 - \cos(2x)}{2} \\
\int \sec x \, dx &= \ln |\sec x + \tan x| + C \\
\end{align*}
\]

The midpoint rule is \( \Delta x [f(\bar{x}_1) + f(\bar{x}_2) + \cdots + f(\bar{x}_n)] \) where \( \bar{x}_i \) is the midpoint of \([x_{i-1}, x_i]\).

The Trapezoidal Rule is \( \frac{\Delta x}{2} [f(x_0) + 2f(x_1) + 2f(x_2) + \cdots + 2f(x_{n-2}) + 2f(x_{n-1}) + f(x_n)] \).

Simpson’s Rule is \( \frac{\Delta x}{3} [f(x_0) + 4f(x_1) + 2f(x_2) + 4f(x_3) + 2f(x_4) + \cdots + 2f(x_{n-2}) + 4f(x_{n-1}) + f(x_n)] \).

If \( E_T \) and \( E_M \) are the errors for the Trapezoidal Rule and Midpoint Rule, respectively, then
\[
|E_T| \leq \frac{K(b - a)^3}{12n^2}, \quad |E_M| \leq \frac{K(b - a)^3}{24n^2}
\]
where \( |f''(x)| \leq K \) for \( a \leq x \leq b \).

If \( E_S \) is the error for Simpson’s Rule then \( |E_S| \leq \frac{K(b - a)^5}{180n^4} \) where \( |f^{(4)}(x)| \leq K \) for \( a \leq x \leq b \).

The Taylor series of \( f(x) \) with center \( a \) is
\[
\sum_{k=0}^{\infty} \frac{f^{(k)}(a)}{k!} (x - a)^k
\]
with partial sums
\[
T_n(x) = \sum_{k=0}^{n} \frac{f^{(k)}(a)}{k!} (x - a)^k,
\]

If \( |f^{(n+1)}(x)| \leq M \) for \( |x - a| \leq d \), then \( |f(x) - T_n(x)| \leq \frac{M}{(n+1)!} |x - a|^{n+1} \) for \( |x - a| \leq d \).
Taylor expansions:

\[ e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} \quad R = \infty \]

\[ \sin x = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n + 1)!} \quad R = \infty \]

\[ \cos x = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!} \quad R = \infty \]

\[ (1 + x)^k = \sum_{n=0}^{\infty} \binom{k}{n} x^n \quad R = 1 \]

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Surface area of the surface obtained by rotating the curve \( y = f(x), \ a \leq x \leq b \), about the \( x \)-axis:

\[ S = \int_{a}^{b} 2\pi f(x) \sqrt{1 + (f'(x))^2} \, dx \]