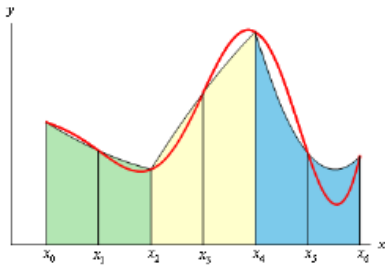


## Numerical Methods

### Simpson's Rule



$$P_2(x) = \int_a^b f(x)dx \approx$$
$$\frac{\Delta x}{3} [f(x_0) + 4f(x_1) + 2f(x_2) + 4f(x_3) + \dots$$
$$+ 2f(x_{n-2}) + 4f(x_{n-1}) + f(x_n)]$$

Where  $n$  is even  
and  $\Delta x = \frac{b-a}{n}$   
and  $x_i = a + i\Delta x$

Error Bounds:  $|E_S| \leq \frac{K(b-a)^5}{180n^4}$