Numerical Methods with Python

Problem Statement:

▶ Given some known function f(x), we wish to calculate the definite integral from x_1 to x_2

Problem Statement:

- ▶ Given some known function f(x), we wish to calculate the definite integral from x_1 to x_2
- Example: $p(t) = p_0 + \int_{t_i}^{t_f} F(t) dt$
 - ▶ Given the function F(t) and the initial momentum p_0 , we can calculate p(t)

Problem Statement:

- ▶ Given some known function f(x), we wish to calculate the definite integral from x_1 to x_2
- Example: $p(t) = p_0 + \int_{t_i}^{t_f} F(t) dt$
 - ▶ Given the function F(t) and the initial momentum p_0 , we can calculate p(t)
- Example: $W = \int_{x_i}^{x_f} F_x(x) dx$

What is an integral? Question: if y(x) is a curve describing the boundary of some shape, what does $\int_{x_{min}}^{x_{max}} y(x) dx$ represent?

What is an integral? Question: if y(x) is a curve describing the boundary of some shape, what does $\int_{x_{min}}^{x_{max}} y(x) dx$ represent?

▶ It is just the area under the curve

Example: a triangle