# MAT122

Area Under Curve – part I

Area Under a Curve – Non-standard Shape

When dealing with non-standard shapes, a method for finding
the area under a curve is to *estimate* the area using a series of rectangles
since the area formula for the rectangle is known.

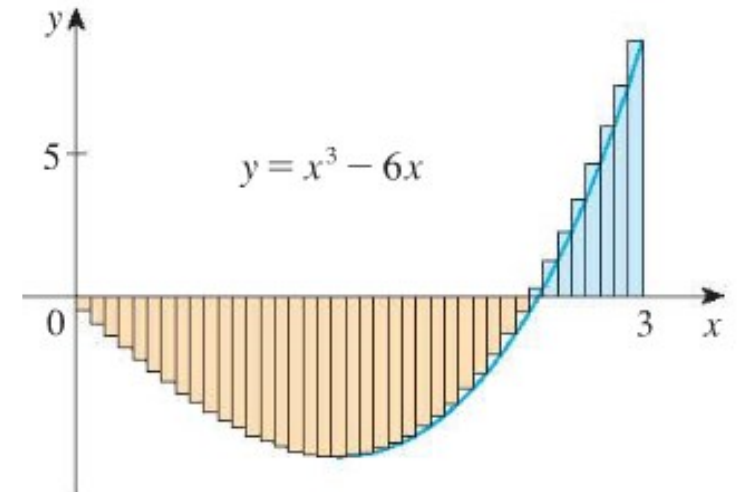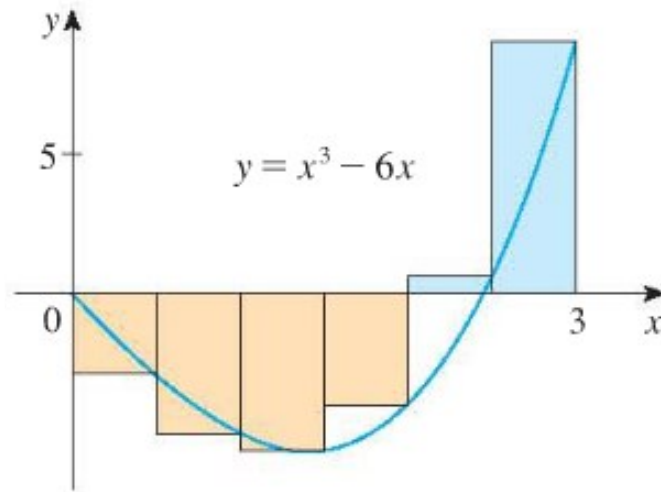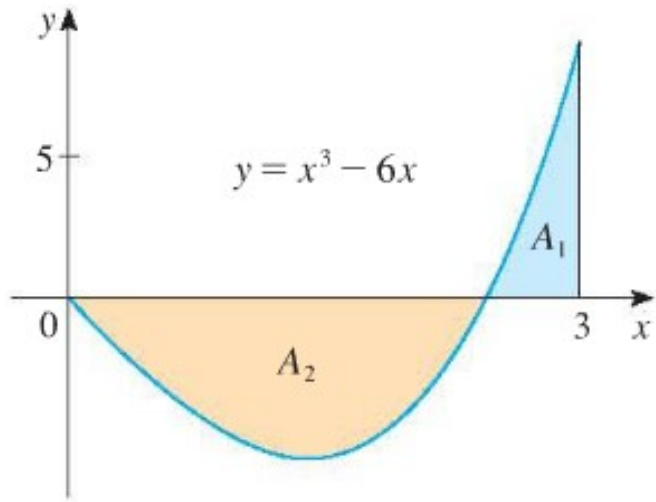This technique is called **Riemann Sum**.

Each rectangle will have the <u>same base</u>.

Recall: find <u>net</u> area:

Base length will be denoted as Δx.
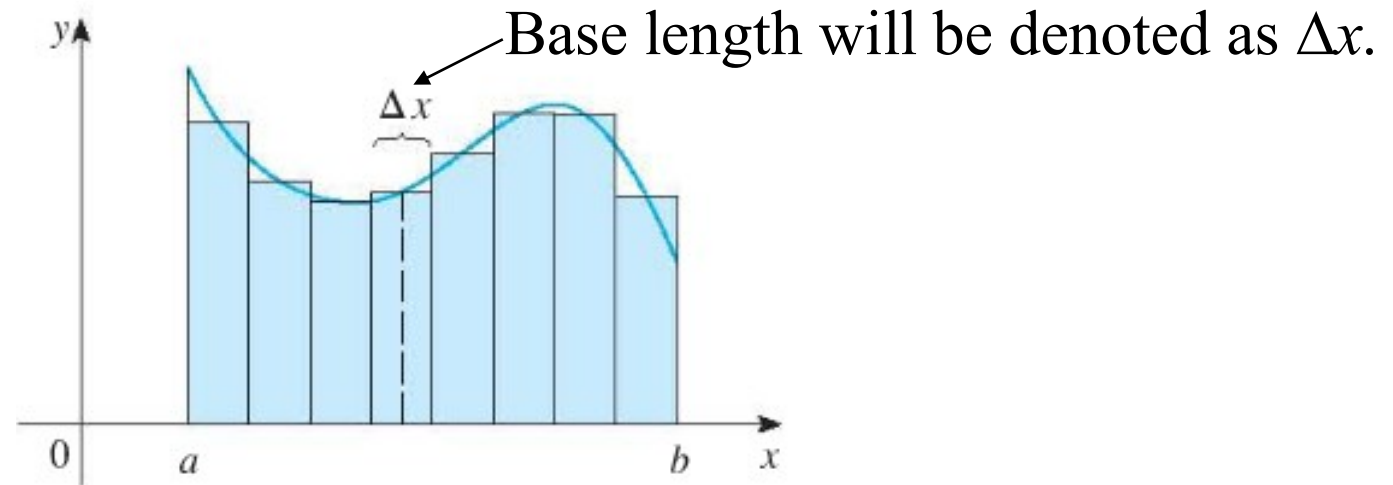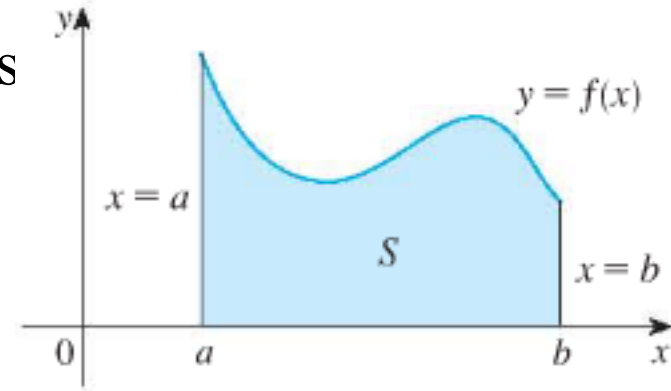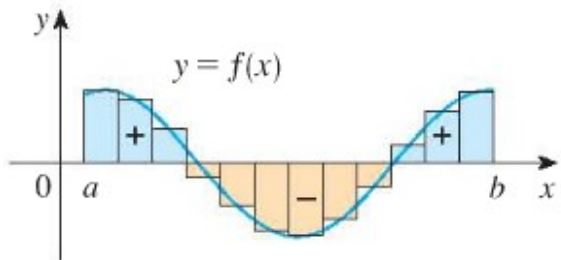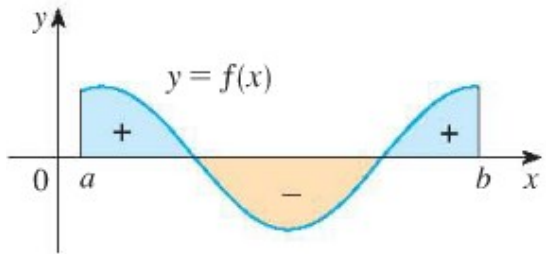
Accuracy of Riemann Sum

The accuracy of the estimation will increase when more boxes are used.

Left-Hand and Right-Hand Riemann Sums

The <u>heights</u> of the boxes are determined by the *y*-values of the function.

Boxes may be drawn with **left** side touching the function:

Boxes may be drawn with **right** side touching the function:

$$L_n = \Delta x(f(x_0) + f(x_1) + \ldots + f(x_{n-1}))$$

$$R_n = \Delta x(f(x_1) + f(x_2) + \ldots + f(x_n))$$