5.1 Integral Notation

The notation that represents the net area under a curve is called a 'definite integral'

- Area under $f(x) = x^3 + 4$ on $[1,3]$:

$$A = \int_1^3 x^3 + 4 \, dx$$

  - pronounced 'the integral of x^3+4 from 1 to 3 dx'
  - $\int$ 'the integral sign' - elongated S (to remind us of a sum)
  - 1 is the 'lower limit of integration'
  - 3 is the 'upper " " "'
  - x^3+4 can be thought of as the height of rectangles
  - dx is the width of the rectangles, comes from $h = \Delta x$
  - we'll learn to work with these in Section 5.3

- Area under $f(x) = \sin x + x$ on $[-7, 6]$ is

$$A = \int_{-7}^{6} \sin x + x \, dx$$