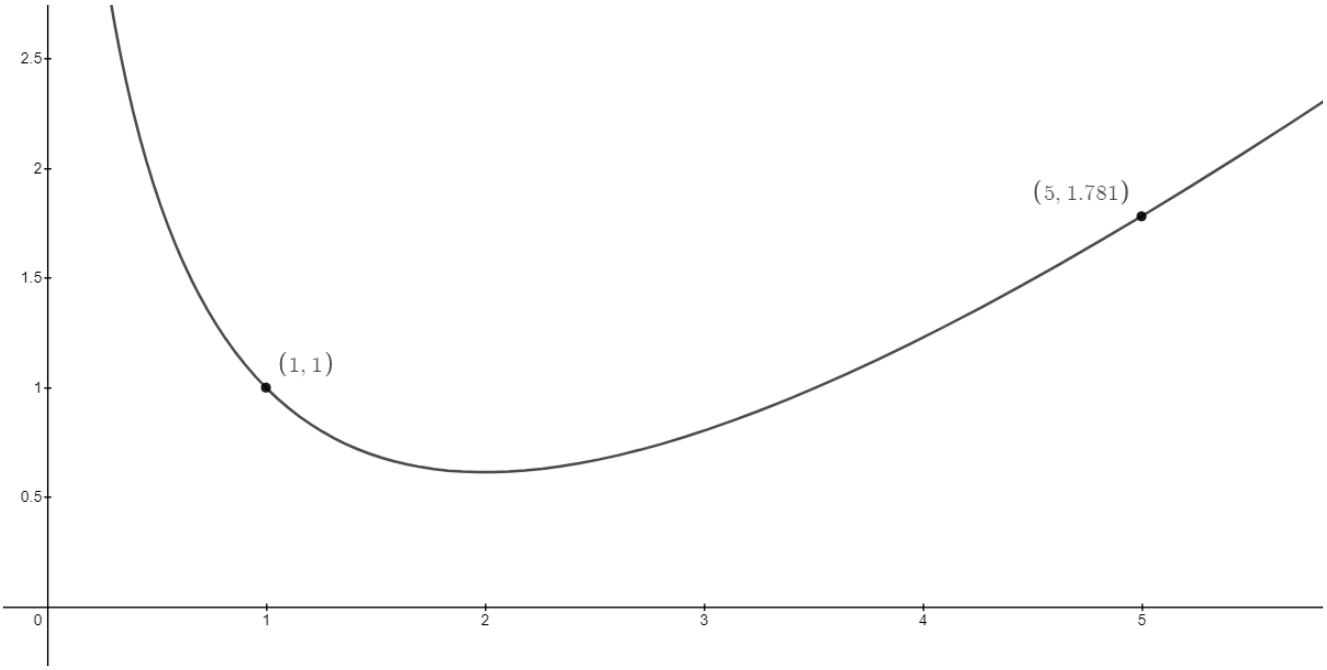
Exercise 1 Estimate the area under the curve of $f(x) = \sin(x)$ over the closed interval $[0, \pi]$ using the right-end numbers with $n = 6$ rectangles.

Exercise 2 Graph the function $f(x) = x - 2\ln(x)$ on the closed interval $[1, 5]$ is given below.



Estimate the area under the graph of f using eight approximating rectangles and taking the sample points to be (i) right endpoints and (ii) midpoints. In each case sketch the curve and the rectangles.

Exercise 3 Evaluate the upper and lower sums for $f(x) = 1 + x^2$, $-1 \leq x \leq 1$, with $n = 3$ and 4.

Exercise 4 the table shows speedometer readings at 10-second intervals during a 1-minute period for a car racing at the Daytona International Speedway in Florida.

Time (s)	0	10	20	30	40	50	60
Velocity (mi/h)	182.9	168.0	106.6	99.8	124.5	176.1	175.6

(a) Estimate the distance the race car traveled during this time period using the velocities at the beginning of the time intervals.

(b) Give another estimate using the velocities at the end of the time intervals.

(c) Are your estimates in parts (a) and (b) upper and lower estimates? Explain.