

Problem statement Suppose $f(x) = \sqrt{3x + 6x^4}$.

- a) Prove that f is increasing on the interval $[0, 1]$.
- b) Write down a finite sum which will be within 10^{-10} of the true value of the area enclosed by the x -axis, $y = f(x)$, and $x = 1$. You are *not* asked to actually compute the sum, just describe it in any convenient fashion.

Hint Your reasoning and your explanation may be guided by the picture below. Note that the horizontal and vertical axes have different scales. The shaded rectangles represent the difference between right- and left-endpoint approximations.

