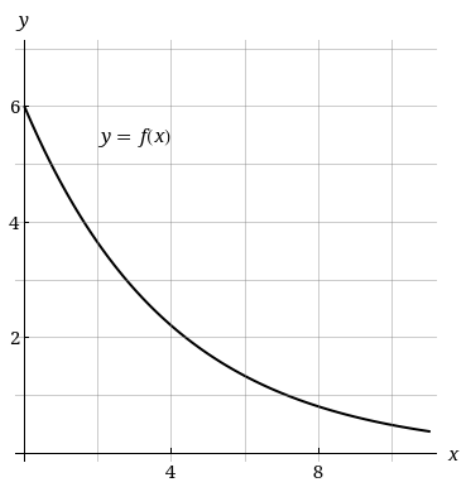


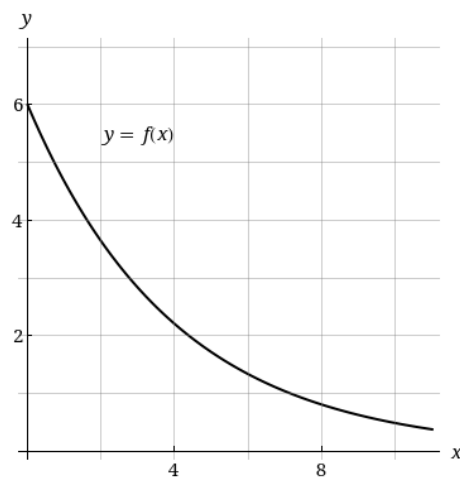
Use five rectangles to find a lower estimate of the area under the graph of  $f$ .

$f$  is decreasing. Use *right* endpoints for a *lower* estimate.



Use five rectangles to find an *upper* estimate of the area under the graph of  $f$ .

$f$  is decreasing. For an *upper* estimate, use left endpoints



The early 4.1's aren't much fun.

Our goal is Riemann sums:

Left, right, midpoint

Section 4.2, we basically learn how to integrate polynomials up to degree 3

Left, right, midpoint