

Section 5.1: Areas and Distances

(1) In this section, we focus on finding the area under curves. When we say "area under the curve" we really mean the area between the curve and the x -axis. Draw several curves and shade in the area under the curve in each case.

(2) How can we approximate the area under a curve using rectangles? (Note: a rectangular approximation is called a Riemann Sum) What decision do we need to make? How do we get a better and better approximation?

(3) What does it mean to have an "over-estimate" or an "under-estimate"? How can you tell if a right hand sum gives an over estimate or an underestimate? Can you always tell for all functions?

(4) If you know the (constant) velocity of a car, how can you find its distance? What if the velocity is changing? Can you still find or approximate the distance?

(5) Compare the process of approximating the distance traveled of a car given its velocity and estimating the area under a curve using rectangles. What do you notice?