

- Suppose we estimate the area under the graph $f(x) = 2^x$ from $x = 1$ to $x = 16$ by partitioning the interval into 30 equal subintervals and using the right endpoint of each interval to determine the height of the rectangle. What is the area of the 12th rectangle?
- A Mustang can accelerate from 0 to 88 feet per second in 5 seconds (i.e., 0 to 60 miles per hour in 5 seconds). The velocity of the Mustang is measured each second and recorded in the table below. You should assume the velocity is increasing throughout the entire 5 second period. The distance traveled equals the area under the velocity curve. You can estimate this area using left endpoints or right endpoints.

t	0	1	2	3	4	5
$v(t)$	0	22	52	73	81	88

- Draw a picture to help you decide which will give an overestimate of the distance traveled and which will give an underestimate of the distance traveled.
 - What is the longest distance the Mustang could have traveled from $t = 0$ to $t = 5$?
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- A train travels in a straight westward direction along a track. The velocity of the train varies, but is measured at regular time intervals of 1/10 hour. The measurements for the first half hour are

time	0	0.1	0.2	0.3	0.4	0.5
velocity	0	8	13	17	20	22

Estimate the distance traveled by the train over the first half hour assuming that the speed of the train is a linear function on each of the subintervals. The velocity in the table is given in miles per hour.