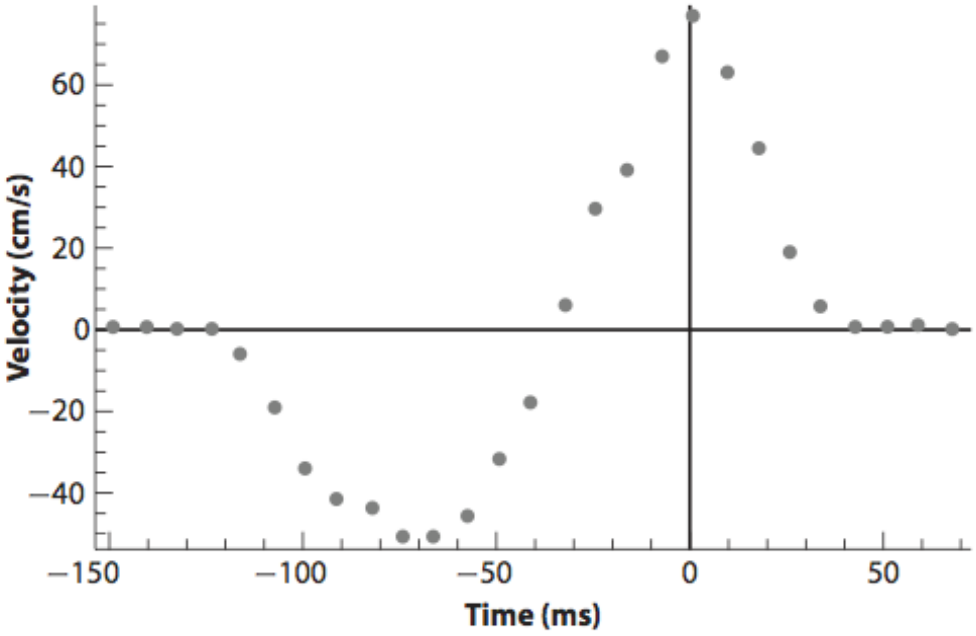
Math 152 – Spring 2016 – In-class Group Assignment 11 – March 7, 2016.

A study published in the journal Science (Reis et al., 2010) used slow-motion videos to collect time-series data on the vertical position of a cat's tongue as it drank water in an effort to better understand the kinematics (i.e., motion) of a cat's tongue while it laps up water. Reis et al. collected time-series data of the vertical velocity of the tongue through 11 laps of the tongue. The graph below shows the average velocity of the cat's tongue over one lap of the tongue (i.e., the velocity of the tongue at each time averaged over the 11 laps of the tongue).



(a) Estimate the area between a graph that goes through these data and the horizontal axis. What are the units of this area you calculated?
(b) Interpret your answer from (a) – what does the area represent?

Pedro M. Reis, Sunghwan Jung, Jeffrey M. Aristoff, Roman Stocker. 2010. How Cats Lap: Water Uptake by *Felis catus*. Science 330:1231-1234.