

## Volume Estimations with Fruit Cross Sections – Class Handout

1. Use the axes below to make a tracing of half of a print of your fruit. The axis of revolution for the fruit should coincide with the  $x$ -axis.



2. Choose a partition for the relevant interval and label the partition points  $x_0, x_1, \dots, x_n$  on the graph above. You may use any  $n$  greater than or equal to 10.
3. List the values of  $\Delta x_k$  for  $k$  from 1 to  $n$ . (This may be a single value if you used a uniform partition.)
4. Choose and label evaluation points  $x_1^*, x_2^*, \dots, x_n^*$ . Draw in rectangles with height  $f(x_k^*)$ . Use a ruler to measure  $f(x_k^*)$  in each case.
5. For a subinterval of your choice, use the space below to draw the the shape that will result from revolving the given rectangle around the  $x$ -axis. Label  $\Delta x_k$  and  $f(x_k^*)$  on your drawing. For the chosen subinterval, calculate the volume of the revolved rectangle.
6. On a separate sheet of paper, make a table with a column for each of the following and fill out the table for  $k$  from 1 to  $n$ :  $\Delta x_k, f(x_k^*)$ , and the volume estimate from the  $k$ th slice.
7. Compute an estimate of the total volume of your fruit.
8. Discuss what sources of error might have contributed to inaccuracies in your volume estimate.