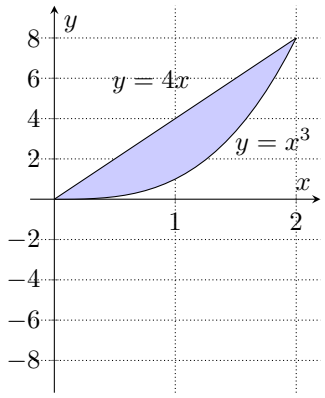
Washers and Shells (Lecture Assignment)

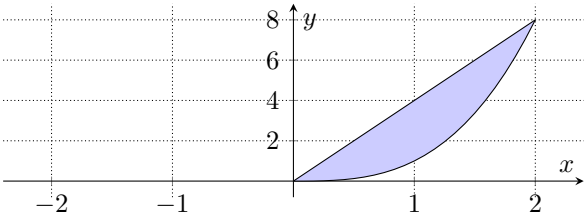
Complete this assignment and submit it to Gradescope by 4:00pm on your class day. You can print this sheet, or write on your own paper. Contact us if internet connections or other issues require alternate arrangements.

Consider the region bounded by $y = 4x$ and $y = x^3$, shown below; notice that the axes have been scaled differently. In each problem below, set up **(but do not evaluate)** an integral to find volume of the solid obtained by rotating this region about the given line.

1. The x-axis; use the method of cross sections. Annotate the diagram to show how you found the inner and outer radius of the cross sections for a given value of x.



2. The y-axis; use the method of cylindrical shells. Sketch a "generic" cylindrical shell on the diagram to show how you found the radius and height of each shell.



One-Minute Questions: Write a sentence for each.

A. What's one mathematical question you have after watching the videos?

B. What's one interesting thing you learned from the book or videos?