

For each three dimensional object described below,

- Sketch the object
  - Set up an integral that gives you the volume of the object
  - Evaluate the integral to find the volume
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- The solid formed when the graph of  $y = x^2 + 1$  from  $x = 0$  to  $x = 2$  is rotated about the  $x$ -axis.
- The solid formed when the region bounded by  $y = x^2$  and  $y = 4$  is rotated about the  $x$ -axis.
- Repeat #1 and #2, but rotating the region about the  $y$ -axis rather than the  $x$ -axis. (In the case of #2, only rotate the region bounded by  $y = x^2$  and  $y = 4$  that lies in the first quadrant.)
- The sphere of radius  $r$ .