

For each three dimensional object described below,

- (a) Sketch the object,
  - (b) Set up an integral that gives you the volume of the object
  - (c) and evaluate the integral to find the volume.
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1. The solid formed when the graph of  $y = x^2 + 1$  from  $x = 0$  to  $x = 2$  is rotated about the  $x$ -axis.
2. The solid formed when the region bounded by  $y = x^2$  and  $y = 4$  is rotated about the  $x$ -axis.
3. The sphere of radius  $r$ .
4. The volume when the region in the first quadrant bounded by  $y = x^2$  and  $y = 4$  is rotated about the  $y$ -axis.
5. The volume when the region from #1 is rotated about the  $y$ -axis.