

1. Find the area of the region bounded between $x = y^2 - 1$ and $x + y = 1$. Sketch and computation are required.
2. Set up an integral that gives the volume of the solid obtained when the region in problem 1 is rotated around the line $x = 3$. You are not required to evaluate the integral, but you should sketch the solid.
3. Set up an integral that gives the volume of the solid obtained when the region in problem 1 is rotated around the line $y = 1$. You are not required to evaluate the integral, but you should sketch the solid.