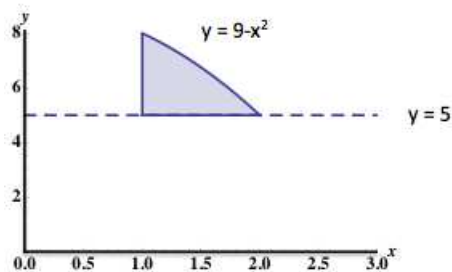


4. [12 points] Consider the region in the xy -plane bounded by the curves $y = 9 - x^2$, $x = 1$, and $y = 5$. This region is pictured below.



Give a definite integral that computes the quantities below. You do not need to evaluate these integrals.

- a. [3 points] The area of the region shown.
- b. [3 points] The volume of the solid obtained by rotating the region about the y -axis.
- c. [3 points] The volume of the solid obtained by rotating the region about the x -axis.
- d. [3 points] The volume of the solid obtained by rotating the region about the line $y = 5$.