

Math 102 — Disk method

Problem 1. Use the disk method to set up an integral to find the volume of each solid of revolution described below. No need to compute the integrals.

- Bounded between: $y = 4 - x^2$, $y = 0$. Revolved around: $y = 0$.
- Bounded between: $y = 3x$, $x = 1$, $x = 3$. Revolved around: $y = 0$.
- Bounded between: $y = \ln x$, $y = 0$, $y = 1$, $x = 0$. Revolved around: $y = 1$.

Problem 2. Use the disk method to set up an integral to find the volume of each solid of revolution described below. No need to compute the integrals.

- Bounded between: $y = 4 - x^2$, $y = 0$, $x = 0$. Revolved around: $x = 0$.
- Bounded between: $y = 3x$, $y = 0$, $x = 1$, $x = 3$. Revolved around: $x = 3$.
- Bounded between: $y = x^2$, $x = 0$, $x + y = 2$ and in the first quadrant. Revolved around $x = 0$.

Problem 3. Let $r > 0$ be a given constant. Use the disk method to find the volume of the solid formed by revolving the region bounded by $y = \sqrt{r^2 - x^2}$ and $y = 0$ around the x -axis. Make sure to set up and compute the integral to get a value in terms of r . What formula did you derive?