1. Find the area of the region bounded by the curves $f(x) = x$ and $g(x) = x^3$.

2. Find the area of the region bounded by $y = \tan(x)$, $y = 0$, $x = 0$ and $x = \frac{\pi}{4}$.

3. **Set-up (but do NOT evaluate) integrals to:**
   a) Find the volume of the solid that is formed when the region bounded by $y = \sqrt{x}$, $y = 0$, $x = 0$ and $x = 4$, is revolved around the $x$-axis.

   b) Find the volume of the solid that is formed when the region bounded by $y = \sqrt{x}$, $y = 0$, $x = 0$ and $x = 4$, is revolved around the $y$-axis.