1. The picture shows the area to the left of $y = \frac{1}{\sqrt{x}}$ from $(\frac{1}{4}, 2)$ to $(4, \frac{1}{2})$. Set up an integral that gives the shaded area. You do not need to compute the area (it is $\frac{3}{2}$).

2. Draw a rectangle $R$ so that the solid obtained by rotating the rectangle around the $x$-axis has less volume than the solid obtained by rotating the rectangle around the $y$-axis.

3. Set up an integral giving the arclength of the curve $y = \sin(x)$ from $x = 0$ to $x = \pi$. (Don’t try to evaluate this one!)