1. We wish to find, by slicing into "coins", the volume of a cone whose height is 8 and whose base radius is 3. Suppose that we have ten slices of equal width. What is the volume of the $i^{th}$ slice?

We will use inscribed coins.

\[
\Delta h = \frac{8}{10}
\]

The $i^{th}$ coin has its top surface at height $h_i$ from the bottom.

\[
h_i = i \cdot \Delta h = \frac{8i}{10}
\]

It's radius is $x_i$ where $x_i = \frac{3}{8} (8 - h_i)$.

2. We wish to find the volume of the solid generated by rotating the region bounded by

\[y = \sqrt{x - 1}, \quad x = 3, \text{ and the } x - \text{axis}\]

about the $x$-axis. Express the exact volume as a definite integral and solve this definite integral. Sketch the region that is being revolved.

\[
\int_{1}^{3} \pi (\sqrt{x-1})^2 \, dx = \pi \int_{1}^{3} x-1 \, dx = \pi \left[ \frac{1}{2} x^2 - x \right]_{1}^{3}
\]

\[
= \pi \left( \frac{9}{2} - 3 - \frac{1}{2} + 1 \right)
\]

\[
= 2 \pi
\]