A three sided pyramid (upside down) is shown at right. The height (measured from the tip to the midpoint along the base of a side as shown) is 5 inches. Cross-sections are equilateral triangles perpendicular to the vertical axis shown in green. The top end is 3 inches on a side.

1. Use the $y$-axis for the axis of integration.

2. Find the volume of a typical slice.
   
   (a) Draw a typical slice and label its dimensions with appropriate arrows as shown.

Write the volume in terms of the dimensions used

$$\text{________} = \text{____________________}$$
(b) Put a coordinate system on this problem. There are two main choices, put the origin at the tip or put the origin at the base of the pyramid. The $y$ axis must move along the vertical axis shown.

Draw an $x$-$y$ cross section using your choice of coordinate system, then locate and label the dimensions of the typical slice using appropriate arrows.

(c) Find the volume of the typical slice in terms of the variable of integration.

\[ \text{_____} = \text{________________} \]

3. Find the bounds of integration and write an integral for the total volume of this pyramid.