A 3-D object is 14 centimeters long and has **elliptical** cross sections, such that length of the minor axis is half the length of the major axis. The length of the major axis of a cross section is given by

\[ y = 7 - \frac{2}{7} x \text{ centimeters} \]

Where \( x \) is the distance, in centimeters, from the larger end as shown.

Find the volume of this object by integrating along the \( x \)-axis.

1. What is the volume of a typical slice in terms of \( x \)?

\[ dV = \phantom{\text{Expression}} \]

2. What is the volume of this object? Be accurate to one decimal digits.

\[ \text{Volume} = \phantom{\text{Expression}} \]
2. **Question Details**

A 3-D object is 4 feet long and has **equilateral triangle** cross sections. The height of a cross section is given by

\[ y = 1 - 0.125x \text{ feet} \]

where \( x \) is the distance in feet from the larger end as shown.

Find the volume of this object by integrating along the \( x \)-axis.

1. What is the volume of a typical slice in terms of \( x \)?

\[ dV = \]

2. What is the volume of this object? Be accurate to two decimal digits.

\[ \text{Volume} = \]

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3. **Question Details**

A 3-D object is 5 inches long and has **parabolic** cross sections such that the length of the base is twice the height. The height of a cross section is given by

\[ y = 3 - \frac{2}{5}x \text{ inches} \]

where \( x \) is the distance, in inches, from the larger end as shown.

Find the volume of this object by integrating along the \( x \)-axis.

1. What is the volume of a typical slice in terms of \( x \)?

\[ dV = \]

2. What is the volume of this object? Be accurate to two decimal digits.

\[ \text{Volume} = \]