1. **Question Details**

An object is thrown straight up. Its height is given by
\[ y(t) = 100t - 16t^2 \]
with \( y \) in feet and \( t \) in seconds. Write a formula for the average velocity on the interval \([3.5, x]\). Enter your answer as an algebraic expression.

\[ \frac{\Delta y}{\Delta t} = \]

Then compute the limit of your formula as \( x \) approaches 3.5. Your answer must be accurate to one decimal place with correct units.

\[ \lim_{x \to 3.5} \frac{\Delta y}{\Delta t} = \]

2. **Question Details**

The potential in an electric circuit oscillates according to
\[ V(t) = -5 \sin(3t) \]
with \( V \) in volts and \( t \) in seconds. Write a formula for the average rate of change of \( V \) on the interval \([0.3, u]\). Then find \( V'(0.3) \).

Be accurate to two decimal places and use correct units.

\[ V'(0.3) = \]

3. **Question Details**

The height of a falling object is given by
\[ h(t) = 400 - 39t - 157e^{-t/4} \]
with \( h \) in meters and \( t \) in seconds. Assuming that the ground is at height \( h = 0 \), how fast is the object moving at the instant it hits the ground? Your answer must be accurate to one decimal place.

**NOTE:** This problem will require you to solve an equation that cannot be solved with any algebraic technique. You will have to obtain a decent decimal approximation by either using a graphing calculator or some other equation solver.

4. **Question Details**

The height of a falling object is given by
\[ h(t) = 400 - 39t - 157e^{-t/4} \]
with \( h \) in meters and \( t \) in seconds. Locate a time when the velocity is \(-20 \text{ m/s}\). Your answer must be accurate to one decimal place.

**WARNING!** You only get 5 tries! Don’t just guess and enter answers.