2.150 It is noted that while stopping, the water surface in a glass of water sitting in the cup holder of a car is slanted at an angle of 15° relative to the horizontal street. Determine the rate at which the car is decelerating.

\[
\frac{dz}{dy} = -\frac{a_y}{g + a_z}
\]

where \( a_z = 0 \) and \( \frac{dz}{dy} = \tan 15° = 0.268 \)

Thus,

\[
0.268 = -\frac{a_y}{g} = -\frac{a_y}{32.2 \text{ ft/s}^2}
\]

or

\[
a_y = -(0.268)(32.2 \text{ ft/s}^2) = -8.63 \text{ ft/s}^2
\]