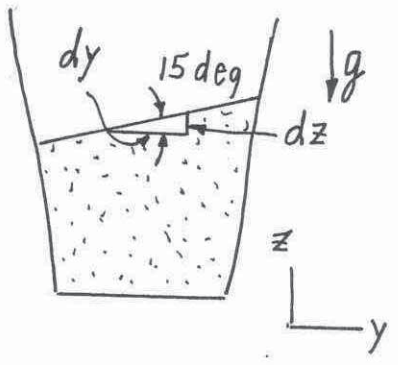
2.150

**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 $\frac{dz}{dy} = \tan 15^\circ = 0.268$

Thus,

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

or

$$a_y = -(0.268)(32.2 \tfrac{\text{ft}}{\text{s}^2}) = \underline{\underline{-8.63 \tfrac{\text{ft}}{\text{s}^2}}}$$