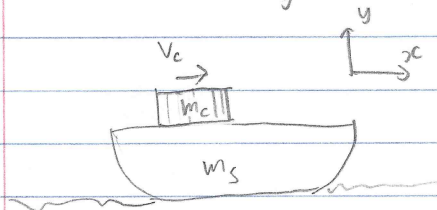


20-P-MOM-DY-9

A container on a freight ship has broken through its straps and slides at a velocity 3 m/s relative to the ship. Determine the final velocity of the ship. The ship's mass is 16 tons and the container has a mass of 1 ton.
 $1 \text{ ton} = 1000 \text{ kg}$.



Solution

$$m_c v_c + m_s v_s = 0$$

$$v_s = \frac{-m_c v_c}{m_s}$$

$$v_c = v_s + v_{c/s} \quad v_{c/s} = 3 \text{ m/s}$$

$$v_c = \frac{-m_c v_c}{m_s} + 3$$

$$v_c = 3 / \left(1 + \frac{m_c}{m_s}\right) = 2.727 \text{ m/s}$$

$$v_s = -0.273 \text{ m/s}$$