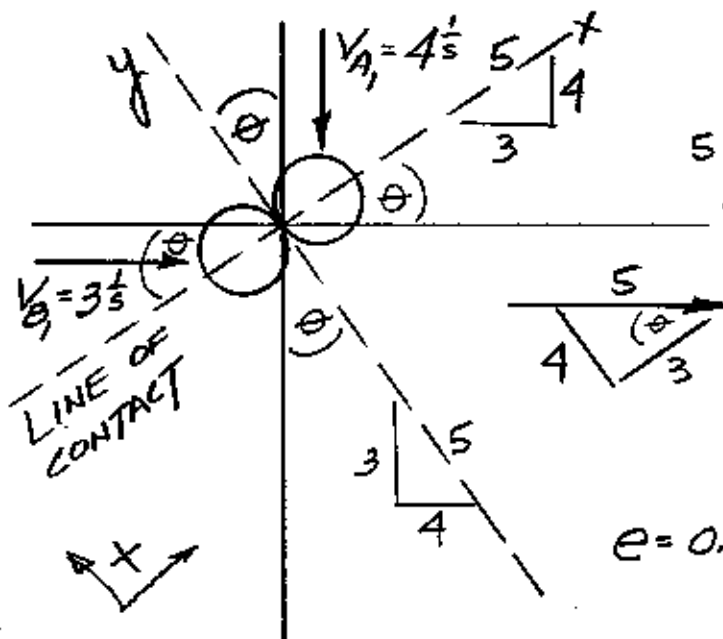


TWO DISKS EACH WEIGH 2 lbf AND COLLIDE.
 $e = 0.5$ ALONG THE LINE OF IMPACT.



LABEL LINE OF CONTACT, X

$$V_{Ax1} = \frac{4}{5} (4\frac{1}{2}) = 3.2 \frac{1}{s} \swarrow$$

$$V_{Ay1} = \frac{3}{5} (4\frac{1}{2}) = 2.4 \frac{1}{s} \searrow$$

$$V_{Bx1} = \frac{3}{5} (3\frac{1}{2}) = 1.8 \frac{1}{s} \swarrow$$

$$V_{By1} = \frac{4}{5} (3\frac{1}{2}) = 2.4 \frac{1}{s} \searrow$$

$$e = 0.5 = \frac{-(V_{B2x} - V_{A2x})}{V_{B1x} - V_{A1x}} \text{ in X-dir.}$$

$$0.5 = \frac{-(V_{B2x} - V_{A2x})}{(1.8) - (-3.2)} \Rightarrow \boxed{-(V_{B2x} - V_{A2x}) = 2.5} \quad (1)$$

CONSERVATION OF MOMENTUM WHERE $m_A = m_B$

$$V_{A1x} + V_{B1x} = V_{A2x} + V_{B2x} = (-3.2) + (1.8) = -1.4 \quad (2)$$

$$\text{ADD (1) + (2)} \quad 2V_{A2x} = 1.1$$

$$V_{A2x} = 0.55 \frac{1}{s} \swarrow$$

$$\text{BACK SUB. INTO (2)} \quad \therefore V_{B2x} = -1.95 \searrow$$

\perp LINE OF IMPACT ALONG y-AXIS

$$m_A V_{A1y} = m_A V_{A2y}$$

$$m_B V_{B1y} = m_B V_{B2y}$$

$$V_{A2y} = 2.4 \frac{1}{s} \text{ (see above)} \searrow$$

$$V_{B2y} = 2.4 \frac{1}{s} \searrow$$

$$V_{A_{TOT}} = \sqrt{V_x^2 + V_y^2} = \sqrt{(0.55)^2 + (2.4)^2}$$

$$= 2.46 \frac{1}{s} = V_{A_{TOT}}$$

$$V_{B_{TOT}} = \sqrt{(1.95)^2 + (2.4)^2}$$

$$= 3.09 \frac{1}{s} = V_{B_{TOT}}$$

FOLLOW EX. 15.84 ON WEB. by MILANO