



$$v_w - v_A = 3 \text{ m/s} \quad \Rightarrow \quad v_A = v_w - 3 \text{ m/s}$$

$$m_A v_A + m_w v_w = 0$$

$$m_A (v_w - 3 \frac{\text{m}}{\text{s}}) + m_w v_w = 0$$

$$m_A v_w - m_A 3 \frac{\text{m}}{\text{s}} + m_w v_w = 0$$

$$(m_A + m_w) v_w - m_A 3 \frac{\text{m}}{\text{s}} = 0$$

$$v_w = \frac{m_A 3 \frac{\text{m}}{\text{s}}}{(m_A + m_w)} = 2.93 \text{ m/s}$$

$$\Rightarrow v_A = 2.93 \text{ m/s} - 3 \text{ m/s} = -0.07 \text{ m/s}$$

wrench: $x_w(t) = (+2.93 \frac{\text{m}}{\text{s}}) t$

Al $x_A(t) = (-0.07 \frac{\text{m}}{\text{s}}) t$

cof mass $x(t) = \emptyset$ at all times!