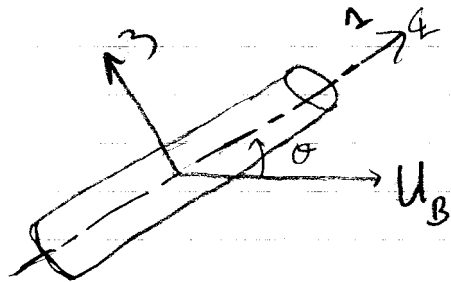


13.012 FALL 2003

PRACTICE PROBLEMS \Rightarrow DUE 10/28 FOR EXTRA CREDIT
 (NO CREDIT PAST 10/28 IN CLASS)
 { WILL BE HELPFUL PRACTICE FOR EXAM }

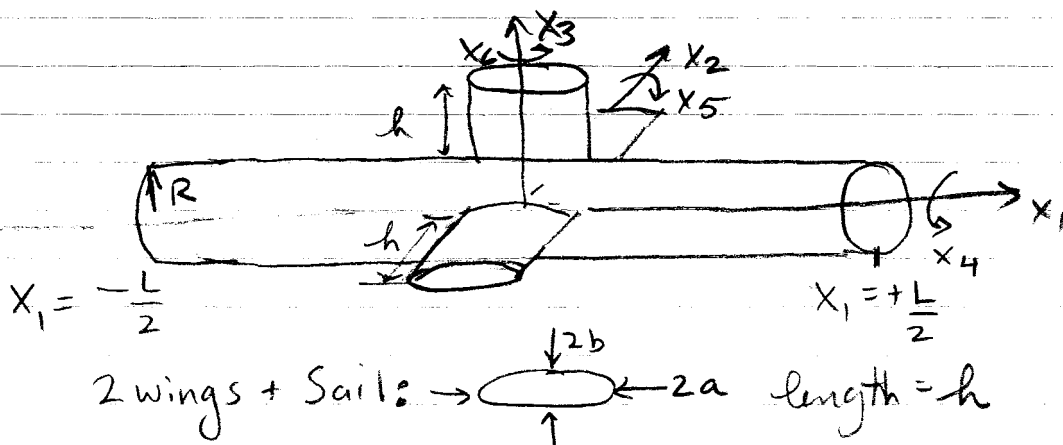
①



a.) DETERMINE THE MUNK MOMENT ON A CYLINDER
 INCLINED BOW UP AT $\theta = 10^\circ$. DIAMETER
 $D = 0.5 \text{ m}$, LENGTH $L = 10 \text{ m}$.

b.) FIND THE CRITICAL VELOCITY IF
 CENTER OF BUOYANCY IS $0.5 \cdot \text{RADIUS}$
 ABOVE THE CENTERLINE ξ AND CENTER
 OF GRAVITY IS $0.5 \cdot \text{RADIUS}$ BELOW.

②



Cylinder body Radius R , length L

a) DETERMINE:

M_{24} , M_{44} , M_{55} by strip theory

b) Find \vec{F} , \vec{M} in terms of m_{ij} (do not solve for values for m_{ij})

$$\vec{U} = [1, 0, 1, 1, 2, 1]$$

$$\vec{\dot{U}} = [3, 1, 2, 1, 2, 0]$$