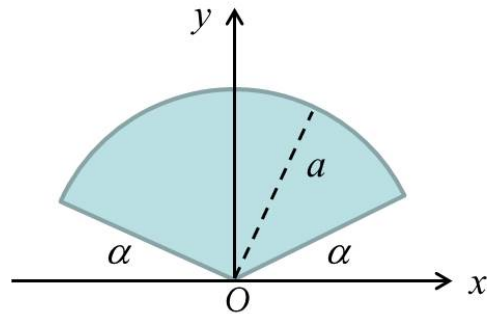


PHYS-3202 Homework 8 Due 17 Nov 2023

This homework is due to <https://uwcloud.uwinnipeg.ca/s/H4t44ogzdTkskyD> by 10:59PM on the due date. Your file(s) must be in PDF format; they may be black-and-white scans or photographs of hardcopies (all converted to PDF), PDF prepared by LaTeX, or PDF prepared with a word processor *using an equation editor*.

1. Thin Wedge from Dr. Elhami

The lamina in the figure below is a section of a circle with radius a and mass M . The angle α measured from the x axis to the lamina is the same on either side of the object, and the lamina lies entirely in the xy plane. The z axis points out of the page, and the lamina has uniform surface density.



- Find the x, y, z coordinates of the center of mass of the lamina.
- Find the moment of inertia around the z axis (which passes through the origin O).

2. Off-Center Cube

A cube of mass M and uniform density fills the region $0 \leq x \leq L, 0 \leq y \leq L, -L/2 \leq z \leq L/2$.

- Find its moment of inertia around the z axis (passing through the origin).
- Find its moment of inertia around the x axis (passing through the origin).