

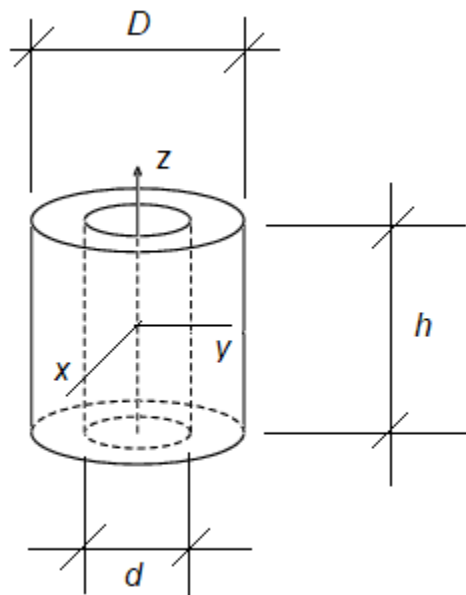
Mass and moments of enertia of a piece of pipe

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Exercise:

Determine the mass of the piece of pipe shown in the figure below and its moments of inertia according to the coordinate axes based on the measured values of the dimensions and density.

We received the measured values in electronic form (pipe_data.mat). Density was measured 25 times, while all dimensions were measured 2000 times.



$$m = \frac{1}{4} \rho \pi h (D^2 - d^2)$$

$$I_z = \frac{1}{32} \rho \pi h (D^4 - d^4)$$

$$I_x = \frac{1}{64} \rho \pi h (D^4 - d^4) + \frac{1}{48} \rho \pi h^3 (D^2 - d^2)$$