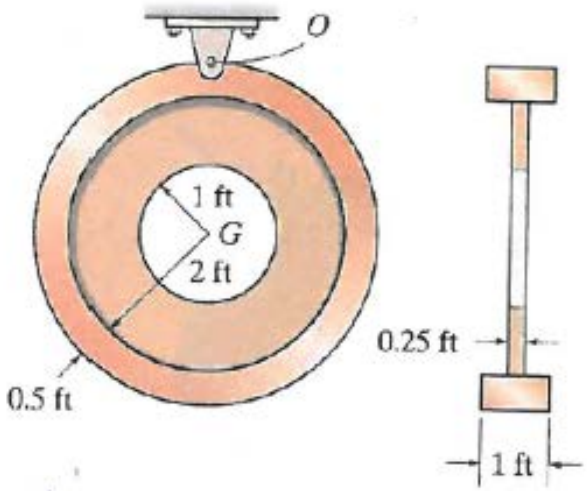
Problem 14. Determine the moment of inertia of the assembly about an axis which is perpendicular to the page and passes through point O. The material has a specific weight of $\gamma = 90$ lb/ft^3.

$I_{G\,Disk} = \frac{1}{2}mr^2$

$\rho = \frac{\gamma}{32.2} = 2.795 \frac{slug}{ft^3}$



Shape	Mass (slugs)	d (ft)	I_G (slug·ft^2)	md^2 (slug·ft^2)	Σ
2.5' dia, H 1ft (+)	$(2.795)\pi(2.5^2)(1) = 54.88$	2.5	$\frac{1}{2}(54.88)(2.5^2) = 171.5$	$(54.88)(2.5^2) = 343$	514.5
2' dia, H 1' (−)	$-(2.795)\pi(2^2)(1) = -35.12$	2.5	$\frac{1}{2}(-35.12)(2^2) = -70.24$	$-35.12(2.5^2) = -219.5$	-289.7
2' dia, H .25' (+)	$(2.795)\pi(2^2)(.25) = 8.781$	2.5	$\frac{1}{2}(8.781)(2^2) = 17.56$	$8.781(2.5^2) = 54.88$	72.4
1' dia, H .25' (−)	$-(2.795)\pi(1^2)(.25) = -2.195$	2.5	$\frac{1}{2}(-2.195)(1^2) = -1.098$	$-2.195(2.5^2) = -13.72$	-14.8

$I_O = 282.4$ slug·ft^2

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