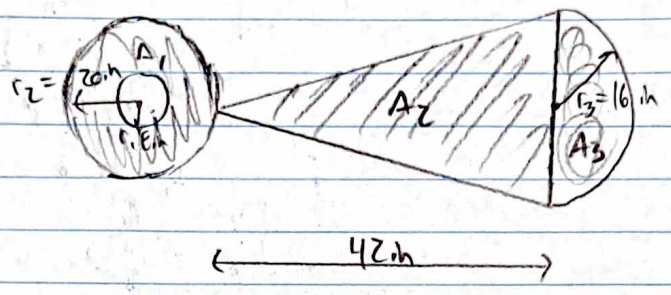
Solutions: 21-S-9.2-MK-02



$$A_1 = \frac{\pi}{4}(20^2 - 8^2) = 263 \text{ in}^2$$

$$A_2 = (16 \text{ in})(42 \text{ in}) = 672 \text{ in}^2$$

$$A_3 = \frac{\pi}{8}(16 \text{ in})^2 = 100.5 \text{ in}^2$$

$$\Sigma A = 1035.5 \text{ in}^2$$

$\bar{x}_1 = 0$ in

$\bar{x}_2 = 20 + 42 \times \frac{2}{3} = 48$ in

$\bar{x}_3 = 20 + 42 + 0.212(16)(2) = 68.8$ in

$\Sigma \bar{A}_x = 0(263 \text{ in}^2) + (672 \text{ in}^2)(48 \text{ in}) + (100.5 \text{ in}^2)(68.8 \text{ in}) = 39170.4 \text{ in}^3$

$$\bar{x} = \frac{\Sigma A_x}{\Sigma A} = \frac{39170.4}{1035.5} = 37.82$$

$\bar{y} = 0$ due to symmetry