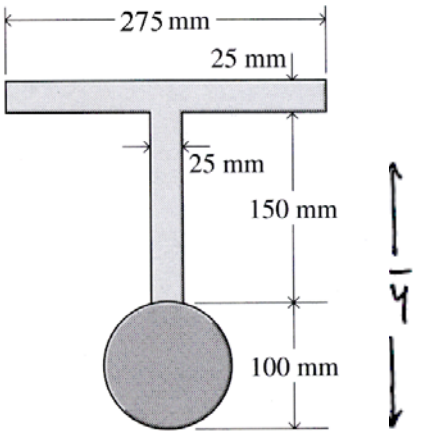
IDE 110 – Summer 2006 Quiz 18 **Name:** _____

1. Find the centroid of the shape below. *Write your answer in the box provided.*

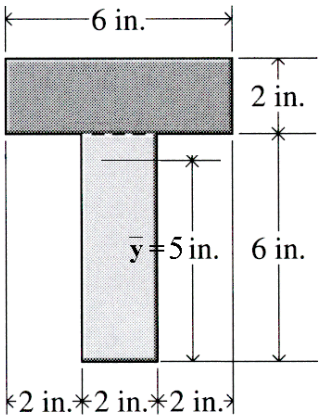


$$\bar{y} = \frac{\Sigma \bar{y} A}{\Sigma A}$$

$$= \frac{262.5(275)(25) + 175(150)(25) + 50(\pi)(50^2)}{(275)(25) + (150)(25) + \pi(50^2)}$$

$$= 154.4 \text{ mm}$$

2. Given that the centroid of the shape below is located 5 inches from the bottom edge as shown, find I_x. *Write your answer in the box provided.*



$$I_x = I_{x1} + I_{x2}$$

$$I_{x1} = \frac{1}{12} bh^3 + d^2 A = \frac{1}{12}(6)(2^3) + 2^2(6)(2) = 52$$

$$I_{x2} = \frac{1}{12}(2)(6^3) + (2^2)(2)(6) = 84$$

$$I_x = 52 + 84 = 136 \text{ in}^4$$