

## ENDS 231: Practice Quiz 5

*Note: A one page (one sided) crib sheet is allowed during the quiz, along with a silent, **non-programmable** calculator.*

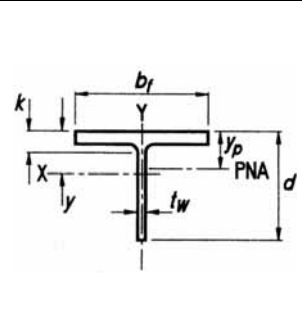
Clearly show your work and answer.

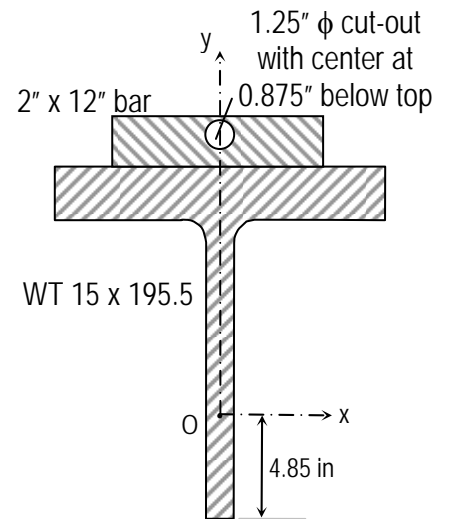
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A steel section must have a void drilled into it for a special application. A WT 15 x 195.5 cut T has been bored with a (*basic*) shaped hole as shown in the cross section diagram.

- Where is the centroid located for the composite section with respect to the origin given?
- What is the moment of inertia,  $I_x$  [or  $I_y$ ], for the composite section?
- [some short question from the text material]

Properties for the standard steel shape:

	<b>WT 15x195.5</b> $A = 57.6 \text{ in}^2$ $d = 16.6 \text{ in}$ $t_w = 1.36 \text{ in}$ $b_f = 15.6 \text{ in}$ $t_f = 2.44 \text{ in}$ $I_x = 1220 \text{ in}^4$ $\bar{y} = 4.00 \text{ in}$ $I_y = 774 \text{ in}^4$
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cross section



possible basic shapes

Answers:

- $\hat{x} = 0 \text{ in}$ ,  $\hat{y} = 9.16 \text{ in}$
- $I_x = 1634.7 \text{ in}^4$ , ( $I_y = 1061.9 \text{ in}^4$ )

**Disclaimer: Answers have NOT been painstakingly researched.**