

1. $\sigma_{\max} = \frac{Mc}{I}$ The point of greatest stress is at the outmost fiber furthest from the centroid.

2. $\sigma = \sigma_{\max} \frac{y}{c}$ At the neutral axis, stress will be 0.

3. Item 2 and item 6 are not prerequisites.

4. The flange shaped beam 
and the L shaped beam 

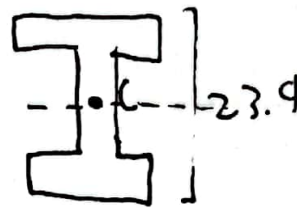
5. $\sigma_{\max} = \frac{Mc}{I}$

$$M = 50,000 \text{ lb} \cdot \text{ft}$$

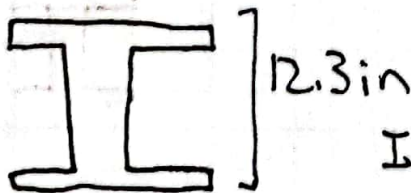
$$I_x = 2100 \text{ in}^4$$

$$c = 11.95 \text{ in}$$

$$\sigma_{\max} = \frac{600,000 \text{ lb} \cdot \text{in} \cdot 11.95 \text{ in}}{2100 \text{ in}^4} = 3,414.3 \text{ psi or } \boxed{3.4 \text{ ksi}}$$



6.



$$I_x = 238 \text{ in}^4$$

$$\sigma_{\max} = \frac{Mc}{I} = 25 \text{ ksi}$$

$$\frac{M \cdot 6.15 \text{ in}}{238 \text{ in}^4} = 25 \text{ ksi}$$

$$\boxed{M = 967.5 \text{ Kips}}$$