ARCH 324 - Structures 2, Winter 2009

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Find $x$ by trial & error so that area $A = B$ (cont)
To solve for \( x \), guess a trial \( x \) and then calculate the areas. Adjust \( x \) so that area 'A' below equals area 'B' above the base line. Approximately triangular areas near the center can be \( \frac{1}{2} bh \).

**Trial 1 \( x = 12' \)**

Area **A** 1067(12) = 12804
Area **B** \( 5120 + 6827 + \left[ \frac{1}{2} \times 853.4(16-12) \right] = 13654 \)

6.4% off

**Trial 2 \( x = 13' \)**

Area **A** 1067(13) = 13871
Area **B** 11947 + \( \left[ \frac{1}{2} \times 853.4(16-13) \right] = 13227 \)

4.4% off

**Trial 3 \( x = 12.6' \)**

Area **A** 1067(12.6) = 13444
Area **B** 11947 + \( \left[ \frac{1}{2} \times 853.4(16-12.6) \right] = 13398 \)

0.3% off

Avg. Area 5 = 13421

Deflection = \( \frac{\text{Area}(1728)}{EI} = \frac{13421(1728)}{29000(1330)} = 0.6'' \)