\[ I = \frac{1}{12} (0.03)(0.2^3) + \frac{1}{12} (0.02)(0.1^3) \]
\[ = 25.833 \times 10^{-6} \text{ m}^4 \]

\[ Q_A = \sum y_i A_i = 0.045(0.03)(0.05) \]
\[ = 0.1125 \times 10^{-3} \text{ m}^3 \]

\[ Q_B = \sum y_i A_i = QA + 0.025(0.1)(0.05) \]
\[ = 0.2375 \times 10^{-3} \text{ m}^3 \]

Allowable shear stress:

\[ \tau_A = \frac{VQ_A}{2bA} = \frac{500(10^3)(0.1125)(10^{-3})}{25.833(10^{-6})(0.03)} \]
\[ = 12.6 \text{ MPa} \]

\[ \tau_B = \frac{VQ_B}{2bB} = \frac{500(10^3)(0.2375)(10^{-3})}{25.833(10^{-6})(0.1)} \]
\[ = 45.97 \text{ MPa} \]

\[ \text{Max} \quad \tau_A = 12.6 \text{ MPa} \]