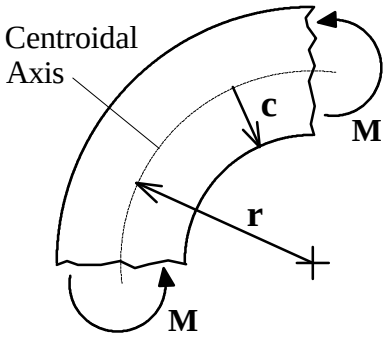
Bending Moment in Curved Beam (Inside/Outside Stresses):

Stresses for the inside and outside fibers of a curved beam in pure bending can be approximated from the straight beam equation as modified by an appropriate curvature factor as determined from the graph below [**i** refers to the inside, and **o** refers to the outside]. The curvature factor magnitude depends on the amount of curvature (determined by the ratio **r/c**) and the cross section shape. **r** is the radius of curvature of the beam centroidal axis, and **c** is the distance from the centroidal axis to the inside fiber.



Inside Fiber: $\sigma_i = K_i \cdot \frac{M \cdot c}{I}$

Outside Fiber: $\sigma_o = K_o \cdot \frac{M \cdot c}{I}$