QUESTIONS TO HAND IN – EXPERIMENT 18

NAME_____

LAB INSTRUCTOR_____ **LAB DAY/TIME**_____

1. Assuming that the moment function *M(x)* is given correctly by eqn. (2), integrate the flexure equation (eqn. (1)) to obtain an expression for the first derivative of the flexure $y'(x)$. Remember that when an indefinite integral is solved an undetermined constant of integration results.

2. Use the fact that the slope of the rod (the derivative of the flexure) must be zero at the midpoint ($\mathbf{y'(\frac{L}{2}) = 0}$) to evaluate the constant of integration from question 1 above.

3. Integrate $y'(x)$ to obtain the functional form of the flexure itself $y(x)$. Again, there will a constant of integration to evaluate.

4. Evaluate this second integration constant by applying the boundary conditions on the flexure: $\mathbf{y(0) = y\left(\frac{L}{2}\right) = 0.}$

5. Finally, show how eqn. (3) is derived by evaluating the flexure at the rod's midpoint.