A beam with constant flexural rigidity $EI$ is supported and loaded by a moment $M_0$ as shown. Using method of model formulas, determine for this beam (a) the reaction $A_y$ at $A$, (b) the slope $\theta_A$ at $A$, (c) the deflection $y_C$ at $C$.

\[
0 = \theta_A + \frac{A_y L^2}{2EI} + 0 - 0 + \frac{-M_0}{EI} \left( L - \frac{L}{2} \right) - 0 - 0 + 0 + 0 - 0 \quad (2)
\]

\[
0 = 0 + \theta_A L + \frac{A_y L^3}{6EI} + 0 - 0 + \frac{-M_0}{2EI} \left( L - \frac{L}{2} \right)^2 - 0 - 0 + 0 + 0 - 0 \quad (2)
\]

\[
A_y = \frac{9M_0}{8L} \quad (1) \quad \theta_A = -\frac{M_0 L}{16EI} \quad (1) \quad \theta_A = \frac{M_0 L}{16EI} \quad (1)
\]

\[
y_C = y\bigg|_{x=L/2} = 0 + \theta_A \left( \frac{L}{2} \right) + \frac{A_y}{6EI} \left( \frac{L}{2} \right)^3 + 0 - 0 - 0 - 0 + 0 + 0 + 0 - 0 \quad (2)
\]

\[
y_C = -\frac{M_0 L^2}{128EI} \quad (1) \quad \quad y_C = \frac{M_0 L^2}{128EI} \quad (1)
\]