We want to solve the following equations to obtain the variables Ca_{in}, Ca_{SR}, and y in terms of the rest that are parameters.

$$\text{Equation 1:} \quad 0 = \left(k_{\text{RyR}} \cdot \left(k_{\text{ryr0}} + \frac{k_{\text{ryr1}} \cdot (Ca_{\text{in}})^3}{(k_{\text{ryr2}})^3 + (Ca_{\text{in}})^3}\right) \cdot \frac{(Ca_{\text{SR}})^4}{(k_{\text{ryr3}})^4 + (Ca_{\text{SR}})^4} + J_{\text{er}}\right) \cdot (Ca_{\text{SR}} - Ca_{\text{in}}) - \frac{V_e \cdot (Ca_{\text{in}})^2}{(K_e)^2 + (Ca_{\text{in}})^2}$$

$$+ \delta_{\text{SMC}} \cdot \left[\alpha_0 - \alpha_1 \cdot \frac{g_{\text{Ca}} \cdot \left(\frac{1}{1+\exp(-(V_0 - V_m)/k_m)}\right)^2 \cdot V_0 \cdot \left(Ca_{\text{in}} - Ca_E \cdot \exp(-2V_0F/(RT))\right)}{2F} - \frac{V_p \cdot (Ca_{\text{in}})^4}{(K_p)^4 + (Ca_{\text{in}})^4}\right]$$

$$\text{Equation 2:} \quad 0 = \gamma \cdot \left[\frac{V_e \cdot (Ca_{\text{in}})^2}{(K_e)^2 + (Ca_{\text{in}})^2} - \left(k_{\text{RyR}} \cdot \left(k_{\text{ryr0}} + \frac{k_{\text{ryr1}} \cdot (Ca_{\text{in}})^3}{(k_{\text{ryr2}})^3 + (Ca_{\text{in}})^3}\right) \cdot \frac{(Ca_{\text{SR}})^4}{(k_{\text{ryr3}})^4 + (Ca_{\text{SR}})^4} + J_{\text{er}}\right) \cdot (Ca_{\text{SR}} - Ca_{\text{in}})\right]$$

$$\text{Equation 3:} \quad 0 = (l_4 \cdot Ca_{\text{in}}) \cdot (1 - y) - l_{m4} \cdot y$$