3. Calculation of the coefficients a, b and c .

In[ ]:= $a = -(m_{11} + m_{22} + m_{33})$ // FullSimplify
simplifica complet

In[ ]:= $b = m_{11} m_{22} + m_{22} m_{33} + m_{33} m_{11} - m_{12} m_{21}$ // FullSimplify
simplifica complet

In[ ]:= $c = m_{12} m_{21} m_{33} - m_{12} m_{31} m_{13} + m_{11} m_{22} m_{33}$ // FullSimplify
simplifica complet

4. Calculate Hopf instability given by the condition : c – ab = 0, in terms of ϵ, q and β.

FindInstance[c – a b == 0 && 0 ≤ ε ≤ 0.1 && 0 ≤ β ≤ 1 && 0 ≤ q ≤ 0.1, {ε, q, β}, PositiveReals]
encuentra caso — reales positivos