State plane trajectories for the series resonant converter below resonance

Consider a series resonant converter operating in the continuous conduction mode below resonance, i.e. \( k = 1 \) CCM, \( 0.5 \leq F \leq 1 \). Notation in this problem is as discussed in class and in on-line notes.

Sketch and label steady-state state-plane trajectories for the following two special cases:

(a) \( F = 1, J = 2 \)
(b) \( F = 0.5, M = 0.5 \)

For each of the two cases, determine \( \alpha, \beta, \gamma \), the maximum normalized capacitor voltage \( M_{CI} \), and the other output variable (\( M \) in (a), \( J \) in (b)).