Examples Synchronous Generators

1. A star connected 3-phase wound field synchronous generator with a synchronous reactance Xs of 25Ω is connected to a 9kV (line) grid and supplies 1MW at 0.863 lagging power factor at its terminals. Evaluate the following:
   a. The phase current.
   b. The resultant voltage V_{XS} across the synchronous reactance.
   c. The required excitation voltage (E_{ph}).
   d. The load angle (δ).