FEM–Homework

Consider the 4th order problem (Biharmonic problem):

$$\frac{d^4 y}{dx^4} = f \text{ for } 0 < x < 1, \quad y(0) = y''(0) = y'(1) = y'''(1) = 0.$$

(a) Derive a variational formulation for the above problem in a proper subspace V of $H^2(\Omega)$. What is V?

(b) Show that V is closed in $H^2(\Omega)$.

(c) Show that the bilinear form you derived is continuous and coercive in V.