(3) Consider the following BVP:

$$-\Delta u = f \quad \text{in} \quad \Omega = (0,1) \times (0,1)$$

$$u = 0 \quad \text{on} \quad \Gamma$$

a) solve the BVP by the finite element method based on piecewise quadratic approximating functions on triangles. (download fem.m file and modify this file to solve this problem. You need to change the local basis functions and the quadrature points)

b) use PDETOOLBOX in Matlab to solve the BVP and compare your result in (a) at the point (0.5,0.5)

c) compare your results from part (a) and problem 3(a) in homework 3.