

**Exercise 10**

Let  $u(x, y)$  be the harmonic function in the unit disk with the boundary values  $u(x, y) = x^2$  on  $\{x^2 + y^2 = 1\}$ . Find its Rayleigh–Ritz approximation of the form  $x^2 + c_1(1 - x^2 - y^2)$ .