Math 3890, Machine Problem 7: Due Tu., 3/9/21

1) Write a function `c = intDP(d,x,y,v1,v2,v3,e1,e2,e3,ie1,ie2,f)` that finds the coefficient vector of the spline $s \in \mathcal{S}_d^0(\triangle)$ that interpolates the function f at all the domain points associated with the triangulation $\triangle$. The coefficients should be numbered as expained in Sect. 4.9. You can use my functions `domT`, `basisv`, and `getindex`.

2) Write a script to test your function. It should
   a) call `readtri` to read a triangulation from a file
   b) call `trilists` to set up the corresponding lists
   c) prompt for `d`
   d) call `intDP` to compute coefficients
   e) use `valspgrid` to evaluate the spline on a 51×51 grid covering the domain.
   f) Use the output to plot the spline and to compute and print max and RMS errors over the grid points. You can use `errg`.
   g) You may have to transpose the matrix g output by `valspgrid` to get the correct plot and correct errors.

3) Run your script with the Franke function and the triangulation corresponding to the data file `type2.25`. Run both the case $d = 3$ and $d = 5$. Hand in the code, error values, and plots.