The assignment is to find the area of the elephant `elephant.tif`.

Let’s agree on some conventions. If \( e = \text{imread('elephant.tif')} \), then \( e \) is an array that is 289 \( \times \) 417. Define the area of the elephant to be

\[
I(f) = \frac{1}{289 \times 417} \int_{0}^{289} \int_{0}^{417} f(x, y) \, dy \, dx,
\]

where \( f(x, y) = 1 \) if \((x, y)\) is inside the elephant and zero otherwise.

1. (3) Estimate \( I(f) \) using nested calls to `quad`.
2. (3) Estimate \( I(f) \) using `dblquad`.
3. (3) Estimate \( I(f) \) using one additional method, your choice.
4. (6) Discuss your estimates. Include
   - A table of your estimates, their uncertainty, and their cost. Measure cost by either time (\texttt{tic} and \texttt{toc}) or number of function evaluations.
   - How you decided on the additional method.
   - Why each method works well or does not work well.
   - Your assessment of sources of error and which estimate is best.

For full credit: Hand in
   - Your discussion.
   - A listing of your well-documented program.
     (Refer to Homework 2 for documentation standards.)