R test task

You should create a simple R Shiny App which calculates area of ellipse by Monte-Carlo method.

Input: a, b, epsilon;

Output: …your choise…

Examples:

1. as data.table with columns:
2. **calculated area;**
3. **real area;**
4. **input relative error;**
5. **real error;**
6. logical value **isGoodAttempt** what means “is Real Error less than Input Relative Error”);
7. **time** for calculation.
8. other columns you want…
9. other way to show pretty result….
10. The app should work for **epsilon** up to 0.00001 inclusive.
11. The function should check input parameters and throw an error for invalid arguments.

You can use any R packages you need to get fast result (ex. dqrng).

**Note:**

Monte Carlo method description <http://en.wikipedia.org/wiki/Monte_Carlo_integration>

Ellipse equation is.

Relative error of Monte-Carlo method is, where N is number of generated points.