Integration functions in R

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Usually, we have two options to do the numerical integration in R.

- To integrate a one-dimensional integral over a finite or infinite interval, use R function *integrate().*
- To integrate a scalar function over a multidimensional rectangle, use R function *adaptIntegrate(),* where you need to install the R package{*cubature*} first.

In this small article I did a little research on the *Cons* and *Pros* of both functions. Hope this can help your application of these functions in practice.

Examples comparing *integrate ( )* and *adaptIntegrate ( ):* Integrate function.R

Conclusions:

1. For the finite interval case, both functions work well. Particularly, adaptIntegrate () also works for one-dimensional integral.

2. For the infinite interval case, for integrate (), the best way is to use "Inf", but one must pay attention to the case that if the function is approximately constant over nearly all its range, the result may be seriously wrong. Also, some functions do not handle vector input properly. For adaptIntegrate (), as long as one can choose a proper "large value" to take the place of "Inf", the result will be good. Moreover, adaptIntegrate () usually works well when integrate () fails.

References contributed to this little work:use r to compute numerical integrals.PDF and cubature.pdf