 

We observe that the estimation error of A always converge to one when the number of points used in the calculation is large enough (>100). We cane deduce that the estimator of A is quite good, because we just have to add an offset to supress the error.

But, for the estimation error of phi, there isn't any convergence, and the error seems to increase or decrease randomly as N increases, so we can say that the estimator of phi isn't efficient.