

# SO methods

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## 1 SAA

“A Guide to Sample-Average Approximation” - Kim, Ragu, Shane Henderson  
Multi-dimensional newsvendor problem analysis shows that differentiability and expectation are interchangeable. The true function and the sample problem have the same nice properties of smoothness and concavity. So then - sufficiently large  $N$  - effectively concave and deterministic opt can be used to find optimum.

We can say that SAA is appropriate for a problem if there is a structure to the sample average function which allows a nice deterministic optimisation solver to be used, and that the true function can be said to share that same structure.

It is also noted here