



MA 323 : MONTE CARLO SIMULATION LAB 10

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Antithetic Variate Technique

NOTE: The values generated are random. So every time the program is executed, we will get different set of values.

M	I_M	95% confidence interval for I_M (length = x)	\hat{I}_M	95% confidence interval for \hat{I}_M (length = y)	Ratio = x/y
100	1.9720505	[1.8948469534208687, 2.049254048390176]	2.0004836	[1.9946445380623754, 2.0063228479055435]	13.221698
1000	1.9949574	[1.9670138551235732, 2.0229011428826533]	1.9989571	[1.996909198480126, 2.001005108542745]	13.644656
10000	2.0060725	[1.9974454761651284, 2.0146996609724512]	2.0000865	[1.9994461497906255, 2.0007269668761594]	13.471232
100000	2.0009068	[1.9981737430477209, 2.0036400208192564]	1.9998032	[1.9995990774659849, 2.000007372649063]	13.388053

From The results we can observe that using antithetic variate technique, the standard deviation in estimation of Y is reduced by a factor of around 13 as can be observed from the ratio of length of confidence intervals.