Physics 213 Problem 8 Week 1

**Stirling and Gaussian Approximation**

Stirling’s approximation says that ln N! is approximately N ln N – N.

Fill out the table below to see how accurate this approximation is.

|  |  |  |
| --- | --- | --- |
| N | ln N! | N ln N – N |
| 10 |  |  |
| 20 |  |  |
| 50 |  |  |
| 100 |  |  |
| 1000 |  |  |

Later in the course we will also need to know how to calculate:

d (ln N!)/dN

Use Stirling’s approximation to do this.