Intermediate Laboratory: Homework 4

Due: 15 February 2019

1 Taylor, *Error Analysis*, 5.3, page 154.

2 Taylor, *Error Analysis*, 5.6, page 155.

3 Taylor, *Error Analysis*, 5.8, page 155.

4 Normal distribution

A normal distribution has the form

$$G(x) = \frac{1}{\sigma\sqrt{2\pi}}\, e^{-(x-x_0)^2/2\sigma^2}$$

Plot this in the range $-10 \leqslant x \leqslant 10$ on the same set of axes for:

a) $x_0 = 0$ and $\sigma = 1$.
b) $x_0 = 2$ and $\sigma = 1$.
c) $x_0 = 0$ and $\sigma = 5$.
d) $x_0 = 2$ and $\sigma = 5$.
e) How is the shape of the graph affected by increasing x_0 while keeping σ constant?
f) How is the shape of the graph affected by increasing σ while keeping x_0 constant?

5 Taylor, *Error Analysis*, 5.12, page 156.

6 Taylor, *Error Analysis*, 5.32, page 160.

7 Taylor, *Error Analysis*, 5.36, page 161.