SMA 2277: CALCULUS III – Assignment

1. The height of a right circular cone is increasing at $3mm/s$ and its radius is decreasing at $2mm/s$. Determine, correct to 3 significant figures, the rate at which the volume is changing (in cm^3/s) when the height is $3.2cm$ and the radius is $1.5cm$.

2. The time of oscillation t of a pendulum is given by $t = 2\pi\sqrt{\dfrac{l}{g}}$. Determine the approximate percentage error in t when l has an error of 0.2% too large and g 0.1% too small.

3. Determine whether the following integral is convergent or divergent, and if its convergent find its value $\int_{-\infty}^{\infty} xe^{-x^2} dx$.