

HW4-4 Soln)

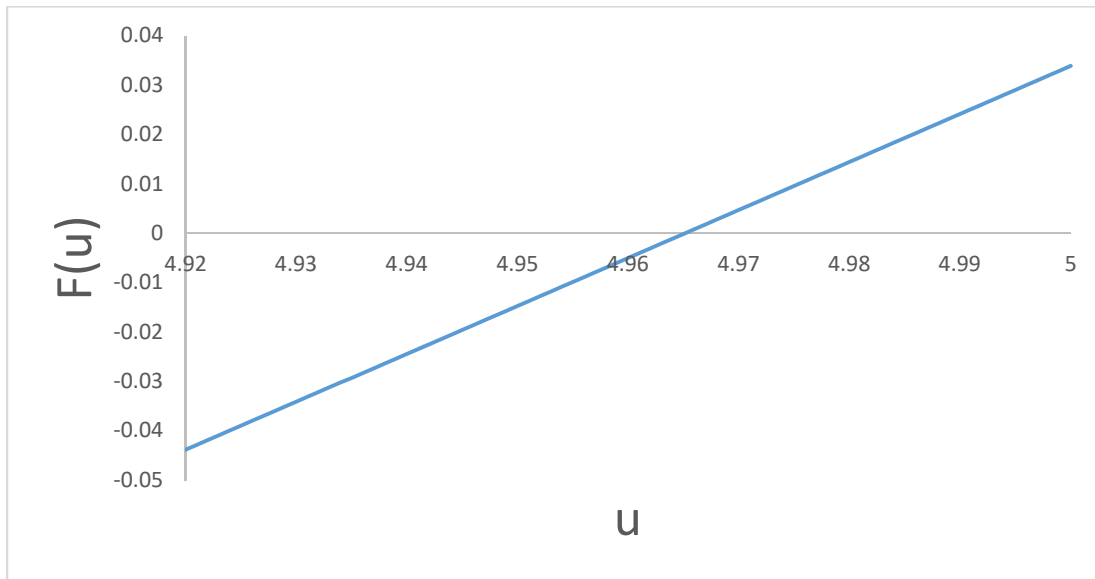
First, we find a numerical value for u_0 that satisfies equation (**). That is, define a function $F(u)$ such that

$$F(u) = (e^u - 1)^{-1} e^u u - 5$$

and find u_0 such that

$$F(u_0) = 0 \quad .$$

Graphing $F(u)$ with Excel results in



4.964	-0.00108
4.965	-0.00011
4.966	0.000861
4.967	0.001833

So that u_0 is approximately 4.9651.

Then,

$$C = \left(\frac{hc}{k_B u_0} \right) = 0.002903 \text{ m/K} \quad .$$