

Warm-Up Problems and Lecture Problems
March 21, 2003

1. As you come in, please tell me your height in inches.
2. Consider the function $f(t) = Ae^{-ct}$ for $t \geq 0$ where A and c are constants.
 - (a) Suppose you want to ensure $\int_0^\infty f(t) dt = 1$. Find conditions on A and c to ensure this.
 - (b) Suppose, in addition, you know that $A = 0.01$, what is c ?
 - (c) Using your $A = 0.01$ and the c that you just found, find a nice expression for the function:

$$F(t) = \int_0^t f(u) du$$

- (d) What is $\lim_{t \rightarrow \infty} F(t)$?
- (e) Compute: $\int_0^\infty tf(t) dt$.