1. Problems to be presented on 9-27

(1) First problem for presentation: Show that

$$\int_0^\infty x^2 e^{-x^2}\,dx = \frac{1}{2}\int_0^\infty e^{-x^2}\,dx$$

(2) Second Problem for Presentation: Can you find a function $f(x)$ with the property that
   (a) $f(n) = n$ for every whole number n
   (b) $\int_0^\infty f(x)\,dx$ is finite.

(3) If the infinite curve e^{-x}, with $x \geq 0$ is rotated about the x axis, what is its surface area?