

Standard integrals that we will use a lot

$$\int_{-\infty}^{\infty} x^{2n} e^{-\alpha x^2} dx = \frac{(2n)!}{n! 2^{2n}} \sqrt{\frac{\pi}{\alpha^{2n+1}}}$$

$$\int_0^{\infty} x^{2n+1} e^{-\alpha x^2} dx = \frac{n!}{2\alpha^{n+1}}$$

Spherical  
coordinates

