Two written questions

1. **What are the computational advantages of using logodds when generating our occupancy grid?**

   Theoretically, we use probability to update the occupancy grid. However, if we use the Standard Bayesian Update (use probability), it will involve lots of multiplication of numbers close to zero, and it is hard for computers. Using log odds when generating our occupancy grid will use addition and subtraction instead of multiplication and division, which is more computationally efficient than using Standard Bayesian Update. Furthermore, the log odds update stores the log odds ratio rather than probability. This is more numerically stable when dealing with (-∞, ∞) and it also avoids numbers extremely close to zero, which is hard for computers to calculate. This is another computational advantage.

2. **Is the angle phi in our Spherical to Cartesian calculation the same as the polar angle in standard Spherical coordinates? Why?**

   No, the angle phi is different from the polar angle in the Standard Spherical Coordinate. The standard polar angle is measured from the z-axis to the ray, but in our case, the phi angle is the angle from the ground plane (X, Y plane) to the ray. As we can see below, the first figure is the standard spherical coordinates (angle phi is the polar angle), and the second figure is our spherical coordinates (angle phi is our angle phi). They are clearly different.