Apollo Program

To understand the motion of our objects in space, we cannot use simple gravitational formulas assuming we are near the surface of the earth. We must account for this by seeing the forces acted upon it when it is in this area.

The gravitational potential from a mass is given by $\Phi(r) = -GM/r$. This can be thought of as the energy exerted to bring an object back to earth by gravity. This is useful to know since we will need the opposite of it in order to escape the gravitational pull of the earth In this case, G is the gravitational constant, M is the mass in kg, which will be the mass of the earth in this case, and r in meters is the distance to the center of the earth. We plotted this first as a function of distance and the potential, and then as a 2d plot showing the potential in different points in space relative to the earth as seen below.