PHYS 211 Gravitational PE Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Use the law of gravitation ($F=\frac{GMm}{r^{2}}$) and the definition of work to show that the gravitational potential energy at far distance, *r* is given by the following equation: G = 6.67 x 10-11 N.m2/kg2





2. A projectile is fired vertically from Earth's surface with an initial speed of 4.4 km/s. Neglecting air drag, how far above the surface of Earth will it go?( ME = 5.98 x 1024kg, RE = 6.37 x 106 m)

3. Planet Roton, with a mass of 4.39 × 1024 kg and a radius of 7000 km, gravitationally attracts a meteorite that is initially at rest relative to the planet, at a great enough distance to take as infinite. The meteorite falls toward the planet. Assuming the planet is airless, find the speed of the meteorite when it reaches the planet's surface.