**Gravitation**

*These are the problems that you and a team of other 2-3 students will be asked to solve during the recitation session next week. Your team can do better if you think about the approach and explanation for these problems BEFORE coming to class.*

1. **Escape from asteroid**: A satellite is launched from a surface of a non-rotating asteroid of radius $R$ with an initial speed equal to escape speed. Assume that the asteroid is a homogeneous sphere with a density $\rho$.

   a) What is the escape speed?
   
   b) Does the escape speed depend on a direction of the initial velocity above a horizontal? Why yes or why not. Support your opinion with diagrams and equations.

2. **Gravity of a semicircle**: A semicircle is made of a homogeneous thin wire and has a mass $M$ and a radius $R$. Find the magnitude $F$ of the gravitational force this wire exerts on a point with mass $m$ placed at the center of curvature of the semicircle.

**Approach**: *Under this tab, list the steps taken by your team for finding each solution. You answer here the questions WHAT? and HOW?*

*Approach 1.*
**Explanation:** Under this tab, explain why your team has chosen those approaches. You answer here the questions WHY? and WHEN?

*Explanation 1.*

*Explanation 2.*