Grade 12 Physics

SPH4U

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Contents

Chapter 3

Unit 2: Energy and Momentum

3.1 Real Gravational Potential Energy

3.1.1 Definitions

In earlier time in this unit, we studied a formula for Gravational Potential Energy

$$E_g = mgh \tag{3.1}$$

In fact, there are few problems with our old formula:

1. It assumes that g is constat (it change as the distance above the Earth's surface changes)
2. the formula uses a reference location which we define. This is not an absolute location, where E_g is 0

So, let's derive for the new equation of Gravational Potential Energy

Consider a satellite of mass m_s at a large distance r from the centre of planet Eart (mass M_e)