Gravitational Potential

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Warm up problems

1. The gravitational field strength on the moon is 1.7 N kg^{-1}.
   Assuming that the moon is a uniform sphere of radius
   1.74×10^6 m, calculate
   (a) the mass of the moon,
   (b) the gravitational field strength 1.0×10^6 m above its surface.

2. A man is able to jump vertically 1.5 m on Earth. What height
   should he be able to jump on a planet of one third of the
   density of the Earth and one half of its radius?

1 To look at order-of-magnitude physics
2 To learn what gravitational potential is.
3 To be able to calculate gravitational field strength.

REMINDER: Office hours are week 1 Tuesdays 3.45–5.0 p.m. in room 19.
Next office hours: Tuesday 25 September 2012

Gravitational potential

Understanding of the definition of gravitational potential, including zero value at infinity, and of gravitational potential difference.

Gravitational potential V in a radial field given by

$$V = -\frac{GM}{r}$$

Graphical representations of g and V with r.

[AQA GCE AS and A Level Specification Physics A, 2009/10 onwards]