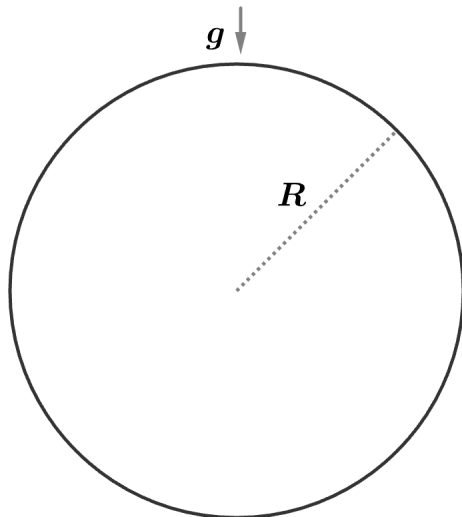# 2012 F=ma Exam: Problem 9

Kevin S. Huang

Setting mg equal to the gravitational force,

$$mg = \frac{GMm}{R^2}$$

$$g = \frac{GM}{R^2}$$

Recall the escape velocity v_{esc} is given by

$$v_{\text{esc}} = \sqrt{\frac{2GM}{R}}$$

Since $gR = GM/R$,

$$v_{\text{esc}} = \sqrt{2gR}$$

so the answer is $\boxed{\text{C}}$.