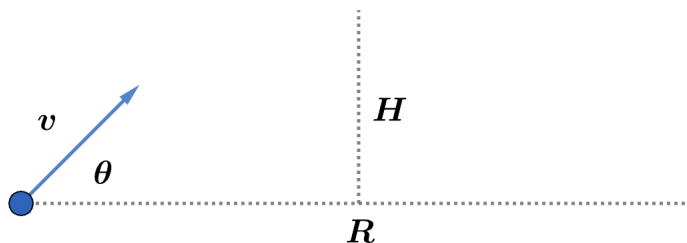


2010 F=ma Exam: Problem 6

Kevin S. Huang



Recall from projectile motion the range and height equations,

$$R = \frac{v^2 \sin(2\theta)}{g} = \frac{2v^2 \sin \theta \cos \theta}{g}$$

$$H = \frac{v^2 \sin^2 \theta}{2g}$$

Then

$$\frac{H}{R} = \frac{v^2 \sin^2 \theta}{2g} \frac{g}{2v^2 \sin \theta \cos \theta} = \frac{\sin \theta}{4 \cos \theta} = \frac{1}{4} \tan \theta$$

so the answer is E.