



Hitting a Target – Prelab Quiz

Answer these questions after reading the “Projectile Motion: Hitting a Target” assignment. Submit your answers via Blackboard as either a MS Word (.docx) or MS Excel spreadsheet file (.xlsx). Be sure to show all of your work so that partial credit can be given.

1. [5 points] Assume that the spread in distances (the standard deviation) of shots fired from a projectile launcher is equal to the radius of a targeted basket. If ten shots are fired, how many times do you expect a shot to land in the basket? Justify your answer. Hint: See Taylor, Chapter 5.4.
2. [5 points] A projectile is fired from the ground with an angle θ above the horizon (see Figure 0.1). After some horizontal distance R the projectile returns to the ground. Find an expression for R in terms of the variable, $\theta \pm \delta_\theta$, and the parameters; $v_o \pm \delta_{v_o}$ (muzzle velocity) and g (acceleration due to gravity).

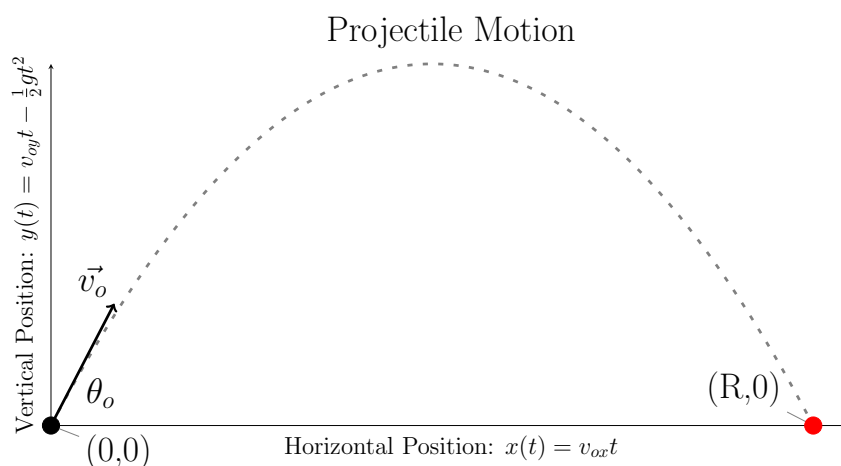


Figure 0.1: A projectile is fired with some velocity \vec{v}_o above the horizon. The projectile travels a horizontal distance R before hitting the ground.