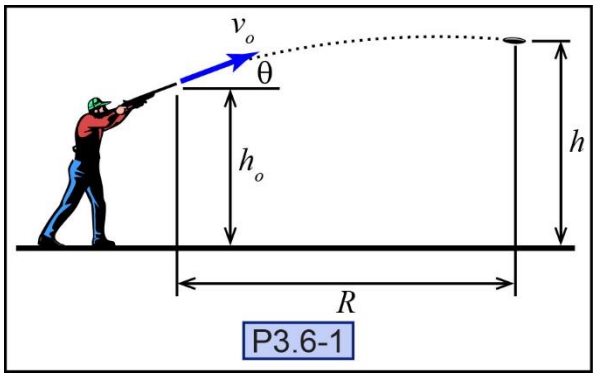
P3.6-1) A skeet shooter aims at a clay pigeon. The muzzle velocity of the rifle is 700 mph, and the man holds the rifle such that the end of the gun is 6 ft off the ground. Assuming that the speed of the skeet is insignificant relative to the speed of the bullet, determine the angle at which the man needs to hold the rifle in order to hit a clay pigeon that is 50 yards away and at an altitude of 30 ft.



P3.6-1

Given:

Find:

Solution:

Label the figure (e.g., add coordinates, point labels)

Range Equation

Use the range equation to calculate the time it takes the bullet to hit the clay pigeon.

t = _____

Height Equation

Use the height equation of the bullet to derive the height as a function of θ.

$h(\theta)$ = _____

Use mathematical software to solve for θ.

θ = _____