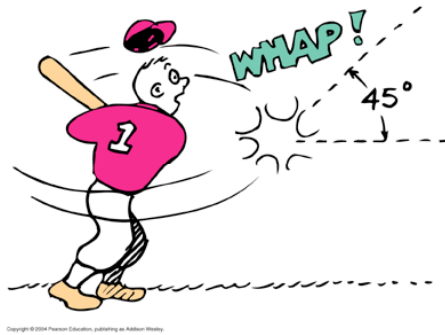


Anatomy of a Homer



You must show the equations you use to solve the problem, solve for the unknown, and then plug in the given values, and finally box or highlight your answers otherwise no credit will be awarded. Use the tangent method to construct the angle for your graph. Solve both analytically and graphically. Your graphical solution should agree within 5% of your analytical one. Remember, $g = 32 \text{ ft/s}^2$. Neglect the effects of air friction.

Suppose a ball is hit at an angle of 27 degrees at 112.4 mi/hr. Find the following:

- 1) First, convert 112.4 mi/h to ft/s. Remember $1 \text{ mi/h} = 1.47 \text{ ft/s}$.
- 2) Sketch a diagram of the velocity vector and its horizontal and vertical components. Use the scale $1 \text{ cm} = 10 \text{ ft/s}$
- 3) Determine the ball's initial horizontal velocity (that is, the horizontal component of the ball as it leaves the bat).
- 4) Determine the ball's initial vertical velocity (that is, the vertical component of the ball).
- 5) How long does it take for the ball to reach its maximum height (t_{top})?
- 6) How long does it take the ball to land (that is, the hang time . . . remember, hang time = $2t_{\text{top}}$)?
- 7) How high does the ball go?
- 8) How far does the ball go?
- 9) What does your answer to #7 say about our assumption that the effects of air friction are negligible?
- 10) What famous landmark is located directly beyond the Port Walk?