

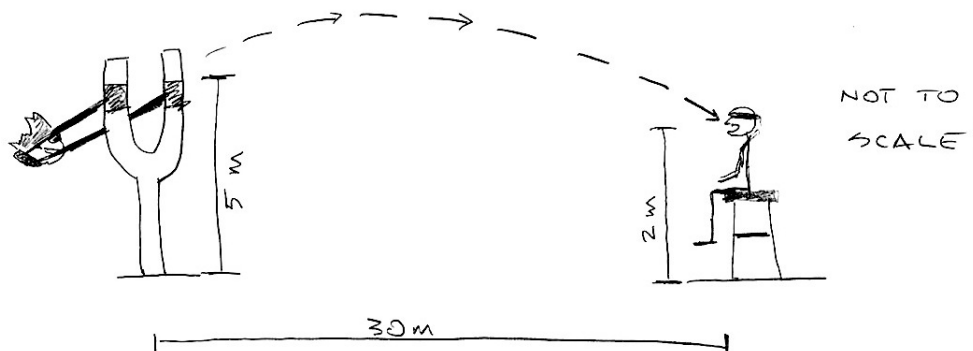
Montgomery Burns
Springfield
February 11, 2011

Math 236 Students
Wheaton College
Norton, MA 02766

Dear Multivariable Calculus Students:

With corporate profits exploding, these are exciting times for those of us looking for new investment opportunities. Based on the success of many recent touring stage shows, such as *The Lion King*, *Spamalot*, *Wicked*, and *Smucker's Stars on Ice*, Smithers has put together a crackerjack plan for The Montgomery Burns Traveling Revue and Revenue Generator™. We know how important product tie-ins are to the kids these days, so when we needed help designing the Angry Birds-themed audience participation snack cake toss, your enterprising and resourceful professor naturally referred me to you.

The basic plan is that we will ask for a volunteer from the audience whom we will blindfold, place on a stool, and tell to open their mouth. We will then launch the Angry Birds-themed snack cake out of an oversized slingshot into the mouth of the grateful but unwitting volunteer, much to the amazement and surprise of the crowd (see diagram below). The plan is to always launch at an angle of 45° to the horizontal, but we need your help in determining the speed that we should launch the Angry Birds-themed snack cake.



Your recommendation for this scenario will be extremely helpful with the first stage of our world tour when we plan to explode onto the surprisingly lucrative Saskatchewan entertainment market. However, we are somewhat concerned about the second and final phase of our triumphant world tour scheduled for Nepal and Bhutan, because as noted by Airy in 1855 and Pratt in 1859, the Himalayas are massive enough to exert a small gravitational pull so that a plumb-line does not hang exactly vertical. After *minutes* of painstaking research on the internet, I have determined that this gravitational effect will be 0.2 meters per second squared due north at our shows in Birgunj and Gelephu.

The stage at the arena in Birguni is oriented so that the grateful but unwitting volunteer will be due east of the slingshot, and the stage is oriented in Gelephu so that the grateful but unwitting volunteer will be southeast of the slingshot. In each of these cases, I would like to know what will happen if we do not make any adjustments from our Saskatchewan shows, as well as any changes that we need to make in the speed and/or direction of launch to ensure that the Angry Birds-themed snack cake lands in the grateful but unwitting volunteer's mouth.

We have begun assembling the show, and in order to have enough time to practice before the tour launches, I will need your report by February 23 at 10:30 a.m.

Capitalistically yours,
Montgomery Burns
CEO, The Montgomery Burns Traveling Revue and Revenue Generator™