You are the technical advisor to the Dave Letterman Show. Your task is to design a circus stunt in which Super Dave Osbourne, who weighs 170 pounds, is shot out of a cannon that is elevated 40^{o} from the horizontal. The "cannon" is actually a 3-foot diameter tube that uses a stiff spring and a puff of smoke rather than an explosive to launch Super Dave. The manual for the cannon states that the spring constant is 1822 Newtons/meter. The spring is compressed by a motor until its free end is level with the bottom of the cannon tube, which is 5 feet above the ground. A small seat is attached to the free end of the spring for Super Dave to sit on. When the spring is released, it extends 9 feet up the tube. Neither the seat not the chair touch the sides of the 12-foot long tube. After a drum roll, the spring is released and Super Dave will fly through the air with the appropriate sound effects and smoke. You have an airbag 3-feet thick for Super Dave to land on. You know that the airbag will exert an average retarding force of 2850 Newtons in all directions. You need to determine if the airbag is thick enough to stop Super Dave safely. -- that is, so he is slowed to a stop by the time he reaches ground level.