#1) The "balle" program overestimates the range and time of flight (see graph). Fix this bit of sloppy programming: Compute a corrected maximum range and time of flight by interpolating between the last three values of "r" using the "intrpf" function. Measure the improvement in the computed range and time of flight when there is no air resistance. Take an initial height of zero meters, initial speed 50 $\frac{m}{s}$, angle of $\theta = 45°$, and try a variety of values for the time step "T".

→ * See attached document for "balle" program

#2) Galileo claims that if a 100-lb. iron ball and a 1-lb iron ball were dropped from a height of 100 braccia (about 50 m), then "when the larger one strikes the ground, the other is two inches behind it."

Modify "balle" program to simultaneously compute the motion of two objects, and show that this statement is grossly inaccurate. Assume that $C_d = 0.5$ (smooth sphere); density of iron is 7.8 $\frac{g}{cm^3}$.

→ And quantify how far apart the two balls would be when the first ball strikes the ground.

• See attached document for graph from problem # 1