LAB QUIZ #2 Name:_____

The Dardanelles Gun was a cannon used by the Ottomans during the siege of Constantinople (1453 AD). It had the longest range of any weapon of its time, capable of firing cannonballs at 125 m/s. The cannon was fired from the ground at an angle of 45° above the horizontal and the ground was completely flat.

We model the effect of air resistance on the cannonball along the horizontal axis as creating an acceleration $a_x = -0.12t\ m/s^2$ (see diagram below), where t is the time measured from the gun firing. Constantinople's knights want to charge against the Dardanelles Gun, at a constant galloping speed of 14 m/s, directly towards it. The Gun's operator wants to fire the cannon and impact the knights, to prevent them from reaching the gun. Determine:

a) The range of the Dardanelles Gun.

b) The distance the knights must be from the Gun when the cannonball is fired if they are to be hit by it.