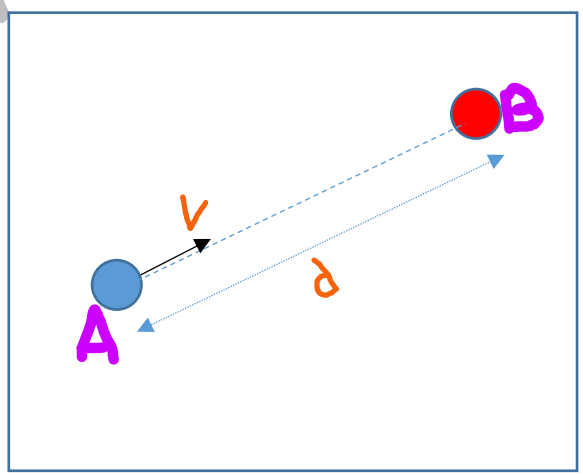
Assignment 2

***Due Date**: As per the deadline on Avenue dropbox titled 'A02'. Time required to do this assignment is about 1 hour. The deadline is set to the end of the week to give students with special accommodations adequate time to complete the assignment. No further extensions will be given.*

Suppose object A is traveling towards object B with a speed *v*. A and B are separated by a distance *d*. If A is decelerating by a value of *a* , we want to determine if it will hit the object B. The user must provide the following values *d, v* and *a*. *d* is in the range [5,10], *a* is in the range [-100,0] and v is in the range [1,10]. The distance travelled by the object A in time *t* (a positive number less than 10 that is also to be received from the user) can be calculated as

$$s = \max(0, vt + 0.5at^2)$$



If *s* is greater than or equal to *d* then the object will collide. Write a python program that does the following: (i) determines if the objects collide for a given set of *d, v*, *a* and t. (ii) for a given value of *d, v* and *t*, and starting with a = -50, determines the critical value of *a* at which A will just touch B.

Hint: To find the critical value of a, keep increasing a by a small amount, example, 0.2 and check for collision. Note: All values are floating point data.

Submission Requirements: Submit a single word or PDF file containing the python program and sample screenshots of the output when you run the program to the dropbox titled **A02** in the *Assignments* section on Avenue. Do not submit a screenshot of the program itself. This will result in a grade of 0. Copy and paste your code into a text editor such as MS word instead. Only a screenshot of the program output is allowed.