**Unit 2 – Worksheet 3a**

**Generalized Motion Function**

1. In Worksheet 3, we simulated the motion of two runners by writing two separate functions. In the spaces below, write the next-x functions for the following four runners.
   1. A runner who starts at with a velocity of .
   2. A runner who starts at with a velocity of .
   3. A runner who starts at with a velocity of .
   4. A runner who starts at with a velocity of .

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1. Just as you do on with examples on your design recipes, circle anything that is ***different*** between the four functions above. Give those things names below based on what they physically represent.
2. We want to write a single next-x function that can simulate all four of these runners. Write four examples of this function working, one for each runner.

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| **examples:**  **end** |

1. Just as above, circle anything that is different in each of the examples above and give those things names.
2. What is the contract of this new next-x function?
3. Write out the complete body of this new next-x function.
4. Open the code found here: . Enter your new next-x function and the constant parameters for each of the four runners. The simulation will use your next-x function to move each of the runners. Do all of the runners move the way you expect them to?