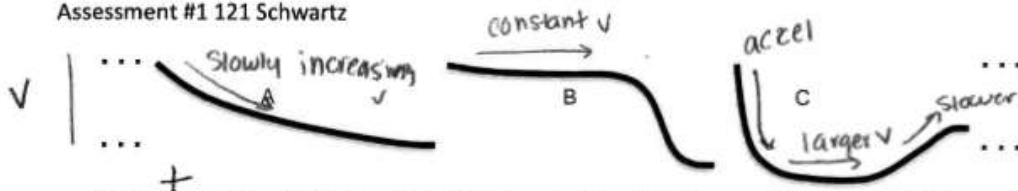


Assessment #1 121 Schwartz



You and your friends ride your low friction carts downhill! You can choose from 3 different hills, the profiles of which are shown at top.

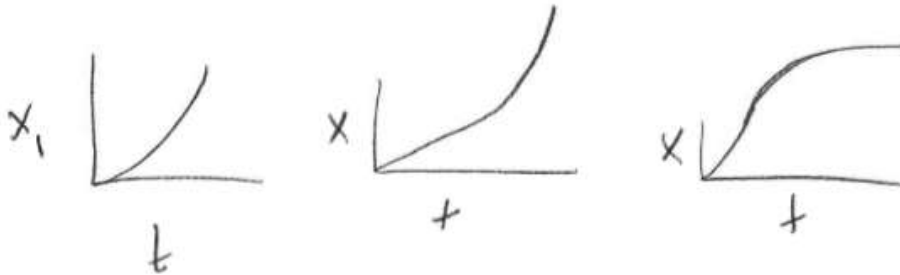
- c/A a) Which hill will provide you with the greatest final speed?
 A b) Which hill will provide you with the longest ride time?

Please answer each of these 2 questions consistent with the form that we learn in class. You can use the back if necessary

- a) Energy Lens → Potential energy is being converted to Kinetic energy or KE & PE.

*Track B will provide the greatest final speed because the end of its track is at the lowest elevation meaning it will have the most amount of PE converted to KE → ^{greater} ~~more~~ velocity
 $\frac{1}{2}mv^2 = ?$

- b) Kinematics Lens → looking at motion as a function of time.



because ΔE_{pot} is small.

*I believe B will give you the longest ride time because its velocity in the beginning is small & constant while the other slopes accelerate earlier covering the same amount of distance in less time

profiles of which are shown at top.

- C/A a) Which hill will provide you with the greatest final speed?
C/A b) Which hill will provide you with the longest ride time?

Please answer each of these 2 questions consistent with the form that we learn in class. You can use the back if necessary

a) Energy Lens

motivation: I chose this lens because the total energy in each system is being conserved. In addition, during the ride down the hill, energy is being transformed from potential gravitational energy to kinetic energy.

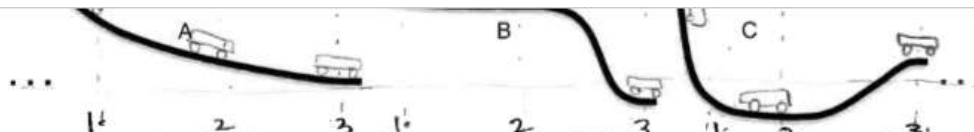
- Curve B will provide the greatest final speed because it has the largest distance between the top of its hill and the bottom, therefore creating more potential energy, which is transferred to kinetic energy, providing the highest speed out of the 3 hills. *Equation?*

b) Kinematics Lens

motivation I chose this lens because part b is asking for information related to motion as an explicit function of time.

- Curve B will have the longest ride time because at the top of its hill, there is only a little bit of potential energy lost, causing a smaller acceleration, increasing the time spent.

excellent



You and your friends ride your low friction carts downhill! You can choose from 3 different hills, the profiles of which are shown at top.

- C/A
C/A
- Which hill will provide you with the greatest final speed?
 - Which hill will provide you with the longest ride time?

Please answer each of these 2 questions consistent with the form that we learn in class. You can use the back if necessary

Energy lens should be used because the carts start with a certain amount of gravitational potential energy which is converted to kinetic energy as it rolls down the hill. Energy is conserved so initial GPE equals final KE.

- Hill B will provide the greatest final speed because the cart will start with more potential energy since the hill drops lower than the rest. That means that more energy is converted to kinetic energy at the bottom of the hill so it will have the greatest final velocity.
- Hill B will have the longest ride because it converts potential energy to kinetic energy at the slowest rate. This is because of the almost flat slope at the top of the hill which means the cart keeps its potential energy longer than the other carts on steeper slopes.

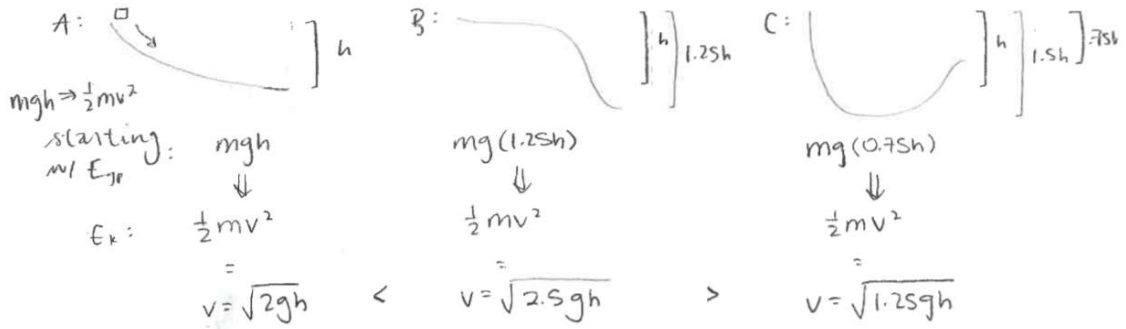
equations?

You and your friends ride your low friction carts downhill! You can choose from 3 different hills, the profiles of which are shown at top.

- A* a) Which hill will provide you with the greatest final speed?
 C b) Which hill will provide you with the longest ride time?

Please answer each of these 2 questions consistent with the form that we learn in class. You can use the back if necessary

a) I'm going to use the energy cons. where $E_p \Rightarrow E_k + E_a$ to compare the three hills' final speeds



Hill B will give the greatest final speed, which seems reasonable because it has the highest acceleration at the end