Week 3 Quiz

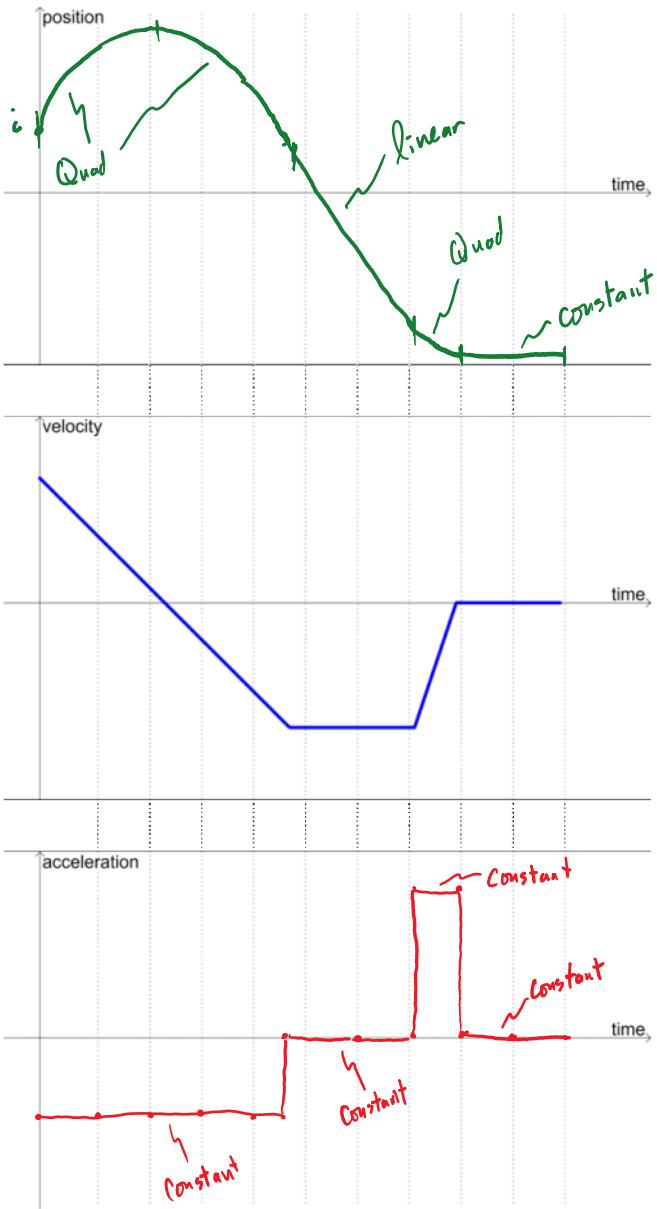
Thursday, October 15, 2020 10:40 AM

1. The velocity vs time graph below has been plotted for a car moving along a straight road. At t = 0, the car was at a non-zero positive position.

(a) Describe, in words, the car's motion based off of the given velocity vs time graph.

(b) Clearly sketch the acceleration vs time graph below the velocity vs time graph. Label any line segments as either: constant, linear, or quadratic. This sketch should be scaled relative to the shape of the velocity vs time graph.

(c) Sketch the position vs time graph above the velocity vs time graph. Label any line segments as either: constant, linear, or quadratic. This sketch should be scaled relative to the shape of the velocity vs time graph.



(a) The car starts out traveling in the positive direction but is slowing its speed at a constant rate. After some time it has slowed to a stop but then instantly starts to speed up in the negative direction. After some time it stops increasing its speed in the negative direction and maintains a constant speed. Then it slows down very quickly until it comes to a complete stop. It then remains stopped for the rest of the time period plotted.

Rubric

(a) - 3 points

- **Traveling in positive direction**
- **Slowing down**
- **Comes to rest momentarily**
- **Speeds up in the negative direction**
- **Maintains constant speed in negative direction**
- **Slows down very quickly**
- **Remains at rest**

(b) - 4 points

- **1 point for each different acceleration period**

(c) - 3 points

- **0.5 pts - starts in positive position**
- **1 pts - quadratic nature of slowing down and then speeding back up in the negative direction**
- **1 pt - linear region while traveling in the negative direction**
- **0.5 pts - constant position when at rest**