

Calculus
Driving Project
Due before: Friday, Feb. 21

You are to go for a drive of between 5 and 15 minutes duration. Your route should be pre-planned, and involve some variations in speed. Make it interesting (in a safe way). If you record a one-way trip somewhere, you still need to come back to class afterwards!

You must obey all traffic laws. If your data indicates speeding or another traffic safety violation, you will lose credit.

Important: You should reset your odometer before the drive, and note the mileage at the end – or, note the total mileage before and after your drive.

You will go as a team of four people, with the following roles:

1. Driver: drives the car, and nothing else. This project must be done safely!
2. Timekeeper: uses a stopwatch and marks out equal units of time – every ten seconds.
3. Speedometer-reader: Reads aloud the speed at each time interval.
4. Recorder: writes it all down.

After the drive, your team will compile the data to create:

a table showing speed at each time interval, and
a graph of speed vs. time.

Both table and graph should be accurate, clear, and well-labeled. You may use software.

Using the table and graph, calculate a left- or right-hand sum to estimate the area. I recommend using a spreadsheet for this step.

From your speed vs. time graph, plot a derivative function and an area accumulation function. Label axes and units.

Find a creative way to display and present your drive and the associated math to the class. Mapping, GPS, Google Earth, or video would be cool.

All of the above is to be done **with your group**, to be presented in class on 2/21.

On your own, write briefly (3-5 paragraphs) an explanation of what each of the three graphs indicates about your drive.

This project counts for two summative grades. Scoring rubrics on the back.
Have fun, and drive safely.

Group work and presentation:

Incomplete.	Inaccurate, sloppy, kinda weak, or late .	Project is on time and includes all elements: table, graph, area calculations, derivative and accumulation functions. Presentation includes all group members.	Project is on time and includes all elements; presentation includes all group members. Clear, informative, and creative presentation. Good work.	Project is on time and includes all elements; presentation includes all group members. Very clear, highly informative, and wildly creative presentation. All work is excellent.

Individual work: thinking and writing

Explanation is very incomplete.	Explanation is incomplete; or, late .	Explanation is complete. On time.	Explanation is complete, thorough, thoughtful. Shows conceptual understanding.	Explanation is complete, thorough, thoughtful. Shows a high level of conceptual understanding. Excellent thinking and communicating about mathematics.