

# Classroom Voting Questions: Calculus I

## 2.1 How do we measure speed?

1. The speedometer in my car is broken. In order to find my average velocity on a trip from Helena to Missoula, I need
  - i. the distance between Helena and Missoula
  - ii. the time spent traveling
  - iii. the number of stops I made during the trip
  - iv. a friend with a stopwatch
  - v. a working odometer
  - vi. none of the above

Select the best combination:

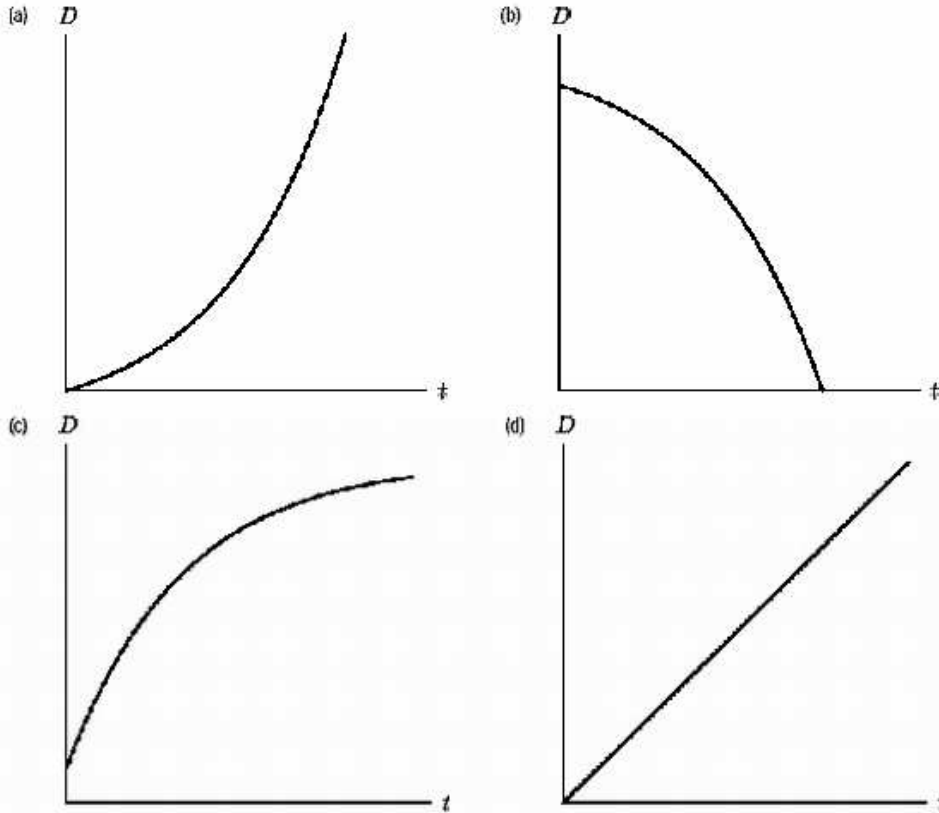
- (a) i, ii, & iii only
  - (b) i & ii only
  - (c) iv & v only
  - (d) vi
  - (e) a combination that is not listed here
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2. The speedometer in my car is broken. In order to find my velocity at the instant I hit a speed trap, I need
    - i. the distance between Helena and Missoula
    - ii. the time spent traveling
    - iii. the number of stops I made during the trip
    - iv. a friend with a stopwatch
    - v. a working odometer
    - vi. none of the above

Select the best combination:

- (a) i, ii, & iii only
- (b) i & ii only
- (c) iv & v only
- (d) vi

(e) a combination that is not listed here

3. Which graph represents an object slowing down, where  $D$  is distance, and  $t$  is time? Assume that the units are the same for all graphs.



4. **True or False:** If a car is going 50 miles per hour at 2 pm and 60 miles per hour at 3 pm, then it travels between 50 and 60 miles during the hour between 2 pm and 3 pm.
5. **True or False:** If a car travels 80 miles between 2 and 4 pm, then its velocity is close to 40 mph at 2 pm.
6. **True or False:** If the time interval is short enough, then the average velocity of a car over the time interval and the instantaneous velocity at a time in the interval can be expected to be close.
7. **True or False:** If an object moves with the same average velocity over every time interval, then its average velocity equals its instantaneous velocity at any time.