

# Physics, Preparation for Friday, Nov. 3

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## Read N3 from *Six Ideas*

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### Office Hours

I try to be available from after classes let out to 9pm every day of the term, but some of you are too polite to just come by the West Duplex and knock. *Therefore, for the rest of the term, I am adding office hours starting at 10am on Monday and Thursday till whenever people leave.* If nobody shows up in the first half hour, I might go off and do other things. So come by between 10:00 and 10:30 and stay as long as you like. This shouldn't detract from me trying to be available at most other times.

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### Presentations

Carried forward from Oct. 31: Jack, N2M.7, p. 37; Rebecca, N2M.8, p. 37

Brian will compare and contrast what is going on in N2 and N3. In short:

- \* In N2, we know position, we use derivatives so get velocity and acceleration, and then multiply by  $m$  to get force.
  - \* In N3, we know force, we divide by  $m$  to get acceleration. We want velocity and position. How on Earth are we going to reverse the chain of reasoning in N3? Using the Fundamental Theorem of Calculus, which is that the integral undoes the derivative!
  - \* If going from position to velocity was a derivative, going from velocity to position must be an integral. Similarly, if going from velocity to acceleration is a derivative, going from acceleration to velocity must also be an integral.
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### For Problem Set #8

1. N2M.9, p. 37, a hopefully straightforward application of taking a derivative
2. N3B.2, p. 50, graphical integration of velocity to get position
3. N3M.2, p. 51, *I swapped a more interesting problem in*
4. N3M.6, p. 51, this one looks a little tricky (just figuring out what is going on)
5. N3M.7, p. 51, this one looks a little tricky (it requires integrating  $e^{-qt}$ )