- Newton
    - Declan
        - I really enjoy being around five people who are animated and compelled by reading Newton's Principia together. It makes class very exciting and sometimes even thrilling. We've figured out a good pace for reading per class and the assignments are helpful in their practical application of Newton's theorems. Brian's enthusiasm is as wonderful and well-received as always.
        - I think that Ben's points at the end of our last class could be an interesting starting place for a meta discussion, if we are to have one. Otherwise, class is doing what I asked it to do and I have no complaints.
    - Sofia
        - There was about a week and a half of awesome classes in the middle-ish of this past term. They were characterized by collective enthusiasm for what we were doing, lively enthusiasm for the material, and a willingness to challenge each other and Brian on our understanding of the physics. Most notably, it was by far the most 'public' our class has been with our understanding of the text--almost all of us were putting our understanding of what Newton was saying out there, to be subject for discussion. Though we haven't recreated that same environment in class since, I feel like the class has been going very well for me personally. The time Luke and I spend outside of class discussing and understanding the propositions and their proofs has been incredibly productive and led to the greatest growth in my understanding of them. I come to class with specific questions and generally feel very prepared to talk about Newton. I think the amount of reading we do outside of class is reasonable, and I appreciate Brian's willingness to listen to us about what is and isn't feasible to do between class periods. The Newton itself is, of course, fascinating and well worth our time.
        - I would like to model our classes to what they looked like at the beginning of term. Specifically, I think it would be very useful to spend class time presenting proofs from the Newton in a way that clearly indicates the presenter's understanding--two column proofs will always be my favorite for this, but don't meant to restrict the class to this type generally. Writing our own problems was a bit of a failure this most recent time, but I think that's indication that it is something we should pursue. Doing so tests not only our understanding, but also our creativity and ability to conceptualize the real world in Newton's terms. Generally, I think our class could benefit from focusing more on the Newton itself. The problem sets, while interesting, have felt entirely separate from the class and don't represent how well one is understanding the material. This was true to an extent with the midterm as well, though it was less guilty of this because of how the text felt more like the basis of it than with most of the problem sets. There are a few that have felt relevant--the first problem on the latest problem set, for example, was an interesting take on Prop 7 that made me think differently about it, though I

was personally confused by the language--but overall, they have seemed to be entirely external to the work we're doing in the class. In general, there seems to be a lot of internal conflict about what the point of this class is, which came to a head in our last meeting of term. Inevitably, we will all have different ideas of what that is; the important thing is that we come to a consensus on how to conduct class in a way that is most productive and leads to the best discussion we can during it. We can later decide what the class means to us individually, but we all bear a responsibility as participators to pursue whatever direction seems to be the most promising. At its most extreme, this is Brian telling us what the point of the class is and then essentially lecturing for the duration of our meeting time. Of course, the problem with this approach is what is already happening--a general apathy from most of the class for discussion, and a lackluster meeting that feels deeply unfulfilling. The crucial ingredient that is missing is engagement, and I think the way to rectify it for now is to enforce it. I am excited by the idea of presenting proofs to each other because it would force everyone to engage with the Newton in a way not many have been. I like the idea of at least having everyone bring a specific question to class, if at least to echo some aspect of making people think about the text more deeply. My favorite thing about my physics class my senior year of high school (after some serious wrestling with it) was how it presented failure as an inevitability. Everyone gets the chance to be wrong, and because it is so communal, you lose the shame that can too often come with failure and begin to appreciate truth for truth's sake rather than the selfish satisfaction of being 'right' all the time. I think this class presents a unique opportunity to be wrong, both in content (being 'wrong' would mean misunderstanding the Newton, or being unable to visualize what he is visualizing, and I think correcting that type of wrongness can be particularly rewarding because you can often see a whole new world unfurl before your eyes), and form (publicly presented proofs means publicly presenting your failure). I think correcting one's wrong understanding of something is one of the most rewarding things in general, but can be particularly so in STEM fields where absolutes are in easier grasp and understanding can build up uniformly. It is odd and frustrating to me that this class has not presented many opportunities to demonstrate a misunderstanding of the Newton and then correct it. Making these demonstrations and visualizations the focus of the class will, I think, lead to more satisfaction and greater engagement with it.

- Luke
  - We are doing a good job at going through the Principia in a single semester. The pacing seems to be working for our goal. I think starting with the Galileo was helpful and a good introduction. As a whole, I think Brian has done a good job of balancing letting students lead the discussion and showing us his understanding when we are stuck or showing us how the modern approach compares to Newton’s method. In some ways, this course

resembles a seminar course In that we are close reading a sophisticated text and spending most of class time exploring questions we have about it. At its best, this creates really exciting discussion where we are trying to solve genuine confusions we have about what Newton is trying to explain. I like having the classes where we summarize the past couple classes of propositions.
        - Class participation became less enthusiastic in the last few weeks of class. Right now class time consists mainly on us talking about confusing parts of the passage that we read and us working through things we are confused about. I think we should set clearer expectations/ come to a consensus about the level of comprehension to come to class with as well as have do more structured activities in class like have one student demonstrate a proposition each class or have everybody come to class with a confusion they had about the reading. I think we should encourage reading with partners outside of class and working through propositions with someone else. I think the problem sets are my least favorite part of the classes. At there best, they ask me to use concepts from the Newton in a way that helps make sure I actually understand them. Usually, I feel like I am superficially applying Newtons terms to a modern physics problem. Sometimes certain problems are really difficult, but in a way that does not feel productive. I think I could do a better job of working on them ahead of time and asking Brian clarifying questions over the weekend.
    - Ben
        - I find this class immensely stimulating. Even the idea that it could be a course was stimulating for me. I love watching Newton, with his paraphernalia and idiosyncratic methods, develop the dominant religion of the last many centuries. It's like peering into the subconscious of all of the most powerful people in the world, understanding what their theology looked like when it was first handed down. And the exercise of working through the proofs, though the purpose is not immediately obvious, is, I believe, very worthwhile as a mental exercise. Making an effort to understand Newton without receiving anything for it is like an exercise in understanding another person. It fits in with Anna Feuer's idea of seminar as "knowing how to give speeches at weddings and funerals" idea, which I personally really like.
        - I don't think that the class is being taught to optimize any of the many qualities which made it originally stimulating for me. We do not work through the proofs as Newton intended - we resort to modern methods and notation. We do not treat the work as Newton intended - we read it as a book of geometry, rather than as a Philosophiae Naturalis. We do not examine the implications of Newton's ideas - we let them stand as they are and refuse to engage in the process of questioning which led Newton to imagine his laws in the first place. We shouldn’t let this class continue as an exercise for its own sake. What are we being trained to understand?
    - Mishel

- This is my favorite class I'm taking this term and I find it gratifying on multiple levels. I love being in Newton's (and Densmore's, I guess) brain and spying on his thought process. I like the problem sets. I've been pleasantly surprised by Brian's willingness to take up as much space as we ask him to and it's a shame that we have been giving him the work of coming up with a discussion. I think we're moving at the perfect pace and I find the outside lit that we're reading enjoyable and a good break from Isaac.
- I find the discussions both hard to get into and not very helpful. I've been finding myself struggling with language a lot and I've never been in a stem class where people love using their outside specialized vocabulary so much. But this is a personal qualm that I'm working on getting over. I find that we have discussions because we have to meet for an hour so we Have to be discussing for an hour, instead of having them be motivated by questions. This has made class feel silly to me and I almost wish we all stayed silent for an hour and just read and worked through Newton together. A better version of this would be to ask people to present proofs, though I think that's sorta infantilizing in its own right.