

1 The wave equation – MAKE SURE YOU DO THIS BEFORE CLASS ON FRIDAY

Argue that the wave equation¹ is a reasonable physical model for waves. You may make this argument for 1D, 2D, or 3D waves. Does it seem reasonable for both longitudinal and transverse waves? You may use the book, the internet, or whatever resources you'd like, but make sure to cite your sources.

1.1 Conceptual Understanding

In the style of Feynman, and including pictures, write out a proof of either the divergence theorem or Stokes' theorem. You're free to spend as much time studying Feynman as you like *before* doing this problem. But, while you're writing it out, you must put away all references. You can re-do the problem until you've completed it fully in a "closed-notes" fashion.

1.2 Green's theorem in the plane

Boas starts out with Green's theorem in the plane. Look at her section. Explain how one can derive that from what we covered in Feynman.

¹What is the wave equation? Look in Boas Ch. 13, or on the internet!