Homework 4 HW

due *2019-02-21*, before class

Exams (tentatively)	midterm (tentatively): **Thursday, March 21, 2019**, *12:30-13:45* final: **Thursday, May 9, 2019**

- Solve the following problems from the textbook: **6-3., 6-5., 6.-7.**
- Read and work through the math of examples **6.3 and 6.4**
- Read additional example below example 6.3 and chapter 6.4

6-3. Show that the shortest distance between two points in (three-dimensional) space is a straight line.

6-5. Consider the surface generated by revolving a line connecting two fixed points (x_1, y_1) and (x_2, y_2) about an axis coplanar with the two points. Find the equation of the line connecting the points such that the surface area generated by the revolution (i.e., the area of the surface of revolution) is a minimum. Obtain the solution by using Equation 6.39.

6-7. Consider light passing from one medium with index of refraction n_1 into another medium with index of refraction n_2 (Figure 6-A). Use Fermat's principle to minimize time, and derive the law of refraction: $n_1 \sin\theta_1 = n_2 \sin\theta_2$.

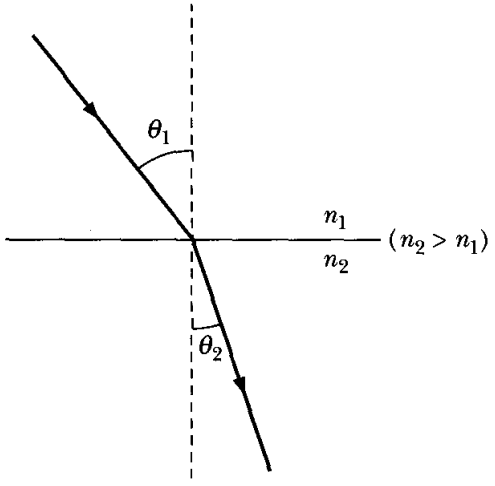

FIGURE 6-A Problem 6-7.