

Below is a selection of problems related to section 1.4. These problems will not be collected or graded. However, you should understand how to work each of these problems. You should begin working on these problems in groups in recitation. You will probably want to finish these problems outside of class. If you have questions, please ask your TA or instructor. If you find a problem difficult, consider working similar problems from the text for additional practice.

1. Work the following problems from Stewart, section 1.4. #3, 5, 6, 7, 11, 13, 18, 19, 25, 26, 27, 29, 35.

Hints: In #19, you should eliminate t and show that you obtain a linear equation verifying x and y . Show that the points (x_1, y_1) and (x_2, y_2) satisfy these equations.

2. Consider the parametric curves

$$x(t) = \cos t, \quad y(t) = 2 \cos t + 1, \quad 0 \leq t \leq \pi$$

and

$$x(t) = t, \quad y(t) = 2t + 1, \quad -1 \leq t \leq 1.$$

How are they the same? How are they different?

3. Remember that our first project will begin after Labor day on Tuesday, 8 September. To prepare for this, please read the laboratory on hypocycloids, p. 55 of Stewart. You should also review the discussion of the cycloid from lecture on Wednesday, 9/2 and from section 1.4 of the text.