Math 1D: Lesson 9 Suggested Problems

Theoretic Problems: Discussed in-class

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1. Consider the single-variable, vector-valued function:

$$\mathbf{r}(t) = \langle x(t), y(t), z(t) \rangle$$

   Let's construct a derivative $\mathbf{r}'(t)$ by doing our five steps.

   i. Graph the curve $C = \{\, \mathbf{r}(t) : t \in D \subset \mathbb{R}\}$

   ii. Find two points on the curve C, call them P_0 and P. Construct the vector-valued equation for the secant line through these two points.

   iii. Measure (or calculate) the direction vector for the secant line through the two points.

   iv. Transform the secant line into a tangent line using the appropriate limit.

   v. Construct the derivative vector $\mathbf{r}'(t)$ as the vector that defines the direction of the tangent line.

Problems Solved in Jeff's Handwritten Notes

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2. Example 11.6.2a p.810 - 811

Suggested Problems: Answers in Book

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3. Example 11.6.1 p. 810

4. Example 11.6.2b p. 811

5. Example 11.6.3 p. 812

6. Exercise 11.6.23 p. 815

7. Exercise 11.6.29 p. 815

Optional Challenge Problems

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8. Exercise 11.6.78 - 11.6.83 p. 816