Vector-Valued Calculus

Reading

Section 14.2

Problems

- Practice Problems: 14.2 1, 2, 5, 7, 9, 13, 17, 19, 21, 22, 25, 31, 37, 38, 43
- Problems to turn in: 14.2 6, 10, 18, 26, 32, 42

Topics to know

1. Limit of a vector-valued function. Direct definition and componentwise computation.
2. Derivative of vector-valued function. As a limit and componentwise computation.
3. Rules for derivatives: sum, multiple, scalar product, chain rule.
4. Rules for dot and cross products (theorem 3). Proof.
5. The derivative vector is tangent to the curve.
6. Example 7: Constant length implies $\vec{r}$ and $\vec{r}'$ are orthogonal.
7. Integrating vector-valued functions term by term.
8. Fundamental Theorem of Calculus for vector-valued functions (theorem 4 and on).