Reading Assignment # 7

Math 13 - Prof. Orellana

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Read Sections 3.1 and 3.2
Don't forget to let me know the pages where you found the answers.

1. What types of functions will be the focus of this chapter?
2. What is the definition of a **path in** $\mathbb{R}^n$? Give the general equation of a line as a function $\mathbf{x} : \mathbb{R} \to \mathbb{R}^3$ as given in Example 1 in Section 3.1.
3. Give the general form of a circular helix.
4. What is the difference between a curve and a path?
5. What is the definition of the derivative of a path, and what name do we use?
6. What is the vector parametric equation for the tangent line? Give two ways to write it. What is the physical significance of the tangent line?
7. What is the velocity of the dot product of two paths? What is the velocity of the cross product of two paths in $\mathbb{R}^3$?
8. What are we trying to measure in Section 3.2?
9. Explain how one would estimate the length of a path.
10. In page 190 they make a reference to the Pythagorean theorem with respect to the distance formula, explain how the Pythagorean theorem applies.
11. How is the "mean value theorem: if $f(x)$ is defined and continuous on the interval $[a, b]$ and differentiable on (a, b), then there is at least one number c in the interval (a, b) $a < c < b$) such that $f'(c) = \frac{f(b)-f(a)}{b-a}$." applied in Section 3.2 to obtain a formula for the length of a path?
12. What is the definition of the length of a path?