Daily Prep Assignment for Feb 23rd

Overview

Basic learning objectives

These are the tasks you should be able to perform with reasonable fluency **when you arrive at our next class meeting**. Important new vocabulary words are indicated *in italics*.

- If $\mathbf{r}(\mathbf{t})$ is a position function then the derivative, $\mathbf{r}'(\mathbf{t})$, is its velocity vector.
- The derivative of vector valued function $\mathbf{r}(\mathbf{t}) = \langle \mathbf{x}(\mathbf{t}), \mathbf{y}(\mathbf{t}), \mathbf{z}(\mathbf{t}) \rangle$ is computed component-wise, i.e. $\mathbf{r}'(\mathbf{t}) = \langle \mathbf{x}'(\mathbf{t}), \mathbf{y}'(\mathbf{t}), \mathbf{z}'(\mathbf{t}) \rangle$
- The *anti-derivative* of a vector valued function is computed component-wise.

Advanced learning objectives

In addition to mastering the basic objectives, here are the tasks you should be able to perform **after class, with practice**.

- The second derivative of a position function is its acceleration function.
- Draw the position, velocity, and acceleration vectors given a vector value function.
- Find an equation for the tangent line of a vector valued function at a specified point.
- If $\mathbf{v}(\mathbf{t})$ is a velocity function then the anti-derivative is its position function.
- Compute the arc length of a curve.
- Understand why the arc length computation works.
- Given a vector valued function know how parametrize with respect to arc length.

To prepare for class

Preview activities:

- Preview activity 9.7.1
- Preview activity 9.8.1

Reading:

- Read section 9.7
- Read the first half of section 9.8 about arc length and parameterizing with respect to arc length. **We will not be covering curvature**.

Watching: Watch these additional resources if you want support reading the text.

1. Overview of 9.7: https://youtu.be/-J0XHyJmpUA
2. Overview of 9.8: https://youtu.be/nmj-0tavw3A

During and after class

- 9.7.2
- 9.7.3
- 9.7.4
- 9.7.5
- 9.7.6
- 9.8.2
- 9.8.3
- 9.8.4
- WeBWork is optional