

# Flipped Calculus 1 at Binghamton

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## The Derivative as a Function

*Section 2.2 in Stewart's Calculus.*

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## Differentiation Formulas



**Video**

*Section 2.3 in Stewart's Calculus.*

### **Preclass Learning Objectives:**

- Derivative formulas for powers and roots.
- Derivative formulas for sums/differences/products/quotients.

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## Trigonometric Derivatives



### Video

*Section 2.4 in Stewart's Calculus.*

#### **Preclass Learning Objectives:**

- Familiarity with the limit of  $\sin(x)/x$  as  $x$  approaches zero.

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## The Chain Rule

*Section 2.5 in Stewart's Calculus.*

#### **Preclass Learning Objectives:**

- Composition and rates of change.
- Chain Rule Formula.

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**Video**

## Implicit Differentiation



**Video**



**Video**

*Section 2.6 in Stewart's Calculus.*

### **Preclass Learning Objectives:**

- An equation implicitly defines many functions.
- Implicitly versus explicitly defined functions.
- Basics of Implicit Differentiation.

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## **Rates of Change in the Sciences**



**Video**

*Section 2.7 in Stewart's Calculus.*

### **Preclass Learning Objectives:**

- Instantaneous Rates of Change are everywhere!

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## **Related Rates**



**Video**



**Video**

*Section 2.8 in Stewart's Calculus.*

**Preclass Learning Objectives:**

- Rates of change can be found by implicitly differentiating an equation. This technique is useful in obtaining information in natural, less mathematical, settings.

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**Laura Anderson and Joseph Brennan**

From:

<http://www2.math.binghamton.edu/> - **Department of Mathematics and Statistics, Binghamton University**

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