

Cooperative Activities in AP Calculus Designed to Link Content to the Mathematical Practices

Session 205 NCTM Washington, DC 2018

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Link to Materials: <https://goo.gl/zif9np>

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Graphing f from f' :

Goal: Create the graph of f using the information in the graph of its derivative.

- Start with an open round with f' projected
- Assign Group Roles
 - Facilitator: Has the graph of f' and answers questions
 - Recorder: Notes down useful information
 - Illustrator: Creates the graph of f'
 - Checker: Checks for logical errors or assumptions
- Group members may ask questions that have numerical or yes/no answers.
- The goal is to have four rounds (in one day or over the course of the week) with group roles rotating
- Provide question or sentence stems to assist students in using correct mathematical language.

Variation: Using the same graphs as f , create the graph of f' .

Series Build

Goal: Become adept at performing basic transformations to series

- Each group starts with a familiar series
- Each group member draws one card with a series manipulation to perform
- Group members work together to make each transformation of the series
- Repeat until all group members have performed a transformation
- Trade initial series, final series, and shuffled cards with another group
- Determine the sequence of steps that created their final series

Note: Some card combinations do not work well together.

Integration Jigsaw

Goal: Determine which integration technique best applies to functions with similar appearance

- Each group member draws one card with an integral
- Group members work individually to solve their problem
- Potential Addition: After about five minutes have all of the students with the same problem have a three-minute huddle to discuss the problem (no pens, no papers)
- Return to initial group to complete the problem
- Group members take turns teaching their problem to the group.

Note: Adapt for AB or BC level integration techniques as needed. I often include functions with no closed form anti-derivative.