Lesson Title:

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Att...

Lemons and Disk Method

Disk Method

This lesson provides a fun, interactive hands on way to learn disk method. When students get lemons, they make calculus.

Worksheet.pdf

Powerpoint.pptx

Parth Shah Lesson Plans

Volume of Rotating Solids: Disk Method

Objective:
Students will understand the concept of disk method as well as how to perform it.

Previous Knowledge:
Students know the concepts of integrals and how to take an integral.

Materials:
Lemons
Rulers
Knives
Paper Towels
Disk Method Simulator (online or hand-held)
Index Cards

Set-up:
Put a lemon, a knife, a paper towel, and a ruler on each table. Have the simulator ready for later in the lesson.

Procedure:
- Tell students to try and find the best estimate of the volume of the lemon with the given materials in their groups. Have groups share their methods with the class.
- Show students the simulator. Have the outline of the top half of the lemon be the graph. Ask students what shape would form if we rotated this graph about the x-axis. Using the simulator, rotate the graph.
- In table groups, ask students how they think this volume could be calculated. Have students share answers.
- Show students using the simulator that if we pretend that the radius is the distance from the graph to the x – axis, and then you rotate the graph, you form many circles whose areas can be summed together to create the volume. Show students that for x-axis rotation, radius is always top minus bottom.
- Ask students to create a formula with their table groups for disk method. Have groups share answers with the class.
- Show students the formula for disk method, and ask students why they this formula is correct. Show students using a visual why this is correct.
- Give students the graph of the lemon, and have them individually calculate the volume of the lemon on index cards. Perform "My Favorite 'No'" with this problem.
- Show students a problem of a graph rotated about the y-axis. Have students discuss in their groups how they can find the volume. Have students share their findings.
- Show students how they can make the equation of the graph in terms of y instead of x and then apply the same formula with the bounds of the integral determined by the y coordinates instead of the x coordinates. Show students that for y-axis rotation, radius is always right minus left.

Description (50 word max.):

Additional Resources:
Worksheets, Powerpoints, Etc.

Attach Resources

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