In Class Exercises (ICE) - 10/27/00

Today, we will learn about four very important topics in calculus:

1. ***What are some of the practical uses of derivatives?***

2. ***How do you find the derivatives of power functions and polynomials?***

3. ***How can you find the exact location of "turning points" or "critical points" of a function?***

4. ***How can you decide whether the "turning points" that you have found represent local maximums, local minimums or something else?***

- ***Working in groups, make a design for a container that you will make out of a 6 inch square of cardboard. The container has to have a bottom, but it doesn't have to have a top.***

- ***Try to optimize your design so that it will have the greatest possible volume.***

- ***If you use calculus during any part of your design and optimization process, make sure that everyone that you're working with understands how calculus is being used to build a better box.***

At the end of this activity, you should be able to answer each of the following questions:

1. ***What do polynomial functions have to do with the process of designing a container?***

2. ***What do derivatives have to do with optimizing the design?***

3. ***How do you differentiate a polynomial function?***

4. ***How do you locate the local maximums and minimums of a function?***

5. ***How can you tell whether a point is a maximum or a minimum?***