Consider the function \( y = mx \) on the interval \([a, b]\).

**Problem Description**

This verifies our algorithm for finding the volume of a solid of revolution about the line \( y = mx \). To verify our method works we make use of the symmetry of the circle. We rotate the chord from \((0,0)\) to \((1,1)\) on the unit circle \( x^2 + y^2 = 1 \) about the line \( x = y \) (the line on which the chord sits) using the algorithm we developed.

We then use the conventional formula from Calculus II to rotate the chord from \((0,0)\) to \((1,1)\) on the unit circle. Notice both chords have the same length and are both on a circle of radius 1. Therefore the solids formed will be of the same volume:

\[
\frac{1}{2} \pi \left( \int_{0}^{1} (1-x^2) \, dx \right)^2
\]

The variable \( n \) represents the number of rectangles used in approximating the volume.

**Future Work**

Through future studies using the Mathematica 5.1 program and studying the concepts of Calculus I, I should be able to come up with a technique in finding a formula that calculates the volume at one arbitrary curve in rotation around another arbitrary curve. This research will lead to the ability to resolve a curve such as \( y = e^x \) around the \( x \)-axis. The problem that is presented here is the changing direction of the radius along the length of the two-curves.

The ability to resolve a curve such as \( y = e^x \) around the curve \( x = 0 \) on a closed interval, may present some issues. The problem that is presented here may involve dealing with negative space due to the elongated shape that the revolution may cause.