

functions for the case where $x = 50$ percent and $r = 10'$ L/day.

16. The volume V and paper surface area A of a conical paper cup are given by

$$V = \frac{1}{3}\pi r^2 h \quad A = \pi r \sqrt{r^2 + h^2}$$

where r is the radius of the base of the cone and h is the height of the cone.

- By eliminating h , obtain the expression for A as a function of r and V .
 - Create a user-defined function that accepts R as the only argument and computes A for a given value of V . Declare V to be global within the function.
 - For $V = 10 \text{ in.}^3$, use the function with the `fminbnd` function to compute the value of r that minimizes the area A . What is the corresponding value of the height h ? Investigate the sensitivity of the solution by plotting V versus r . How much can R vary about its optimal value before the area increases 10 percent above its minimum value?
17. A torus is shaped like a doughnut. If its inner radius is a and its outer