

**HW 1E (Due April 10) - Optional problem for extra credit - 3 points:** A bowl with a small hole in the bottom is filled with water. If the depth of the water decreases at a constant rate, find a possible equation for the inner surface of the bowl. You may assume the bowl is a surface of revolution. You will need to use Toricelli's Law: The speed of the fluid exiting the hole is  $\sqrt{2gh}$ , where  $h$  is the depth of the water. Such bowls were used as clocks thousands of years ago.