MATH 162   PRACTICE QUIZ 2A

1.   Find a curve through the point (e, 4) in the xy-plane whose arc length from x = 1 to x = 7 is given by:

$$\int_{1}^{7} \sqrt{1 + \frac{(\ln x)^2}{x^2}}\ dx$$

2.   Charlotte, the spider, lives on the xy-plane. At time *t* (minutes), she is located at x(t) = cos t and y(t) = sin² t, where distance is measure in yards.   How far does Charlotte travel from t = 0 to t = π/2 minutes? (You need not evaluate the integral.)

3.   Find the area of the surface obtained by rotating the curve $y = 2\sqrt{1-x}$, $-1 \le x \le 0$, about the *x-axis*. (You need not evaluate the integral.) Sketch.

4.   An inverted conical tank of height 20 feet and base radius of 10 feet is filled with olive oil weighing 51 lb/ft³. How much work does it take to pump all of the oil to the rim of the tank?

The good Christian should be wary of mathematicians and all those who make a practice of sacrilegious predictions, particularly when they speak the truth. Because the danger exists that these people, in league with the devil, may becloud the souls of men and enmesh them in the snares of hell.

- St. Augustine