1. State The Fundamental Theorem of Calculus (both parts).

2. Suppose that $f(x)$ has the following definition:

$$f(x) = \int_0^x (1 + \sin^2 t)^{1/2} dt$$

   (a) What is $f'(x)$?

   (b) Express $g(x) = \int_2^{\cos x} (1 + \sin^2 t)^{1/2} dt$ in terms of f . Then find $g'(x)$.

3. What is wrong with the following argument?

$$\int_{-1}^2 \frac{dt}{t^2} = \frac{-1}{t}\bigg|_{-1}^2 = -\frac{1}{2} - \left(-\frac{1}{-1}\right) = -\frac{1}{2} - 1 = -\frac{3}{2}$$

4. Are the following statements true or false? Explain your answer.

   (a) The FTC 1 is only valid for positive functions.

   (b) If we cannot find an antiderivative of $f(x)$, then the definite integral does not exist.

   (c) If $F(x)$ and $G(x)$ are both antiderivatives of $f(x)$, either one can be used in calculating a definite integral of $f(x)$.

5. Then we will head over to Giordano's at 815 W Van Buren St # 115 for the ESP Pizza Luncheon! We can walk over together, or if you prefer you can meet us there. We will aim to be there at 11 AM.