1. (10 points)
   (a) Find an integral that gives the length of the curve \( y = f(x) = x^2, \ 0 \leq x \leq 4 \) (do not evaluate this integral).

   (b) Find an integral that gives the surface area of the surface of revolution obtained by revolving the curve \( y = f(x) = \sqrt{x}, \ 0 \leq x \leq 4 \) about the y-axis (do not evaluate this integral).

2. (10 points)
   (a) (4 points) Find the force on the bottom of the rectangular tank whose base is 2 feet by 4 feet and whose height is 3 feet.

   (b) (6 points) Find the total force on the triangular dam which is a right triangle with height 4 feet and top 3 feet if the water goes all the way from the bottom of the triangle to the top of the triangle.