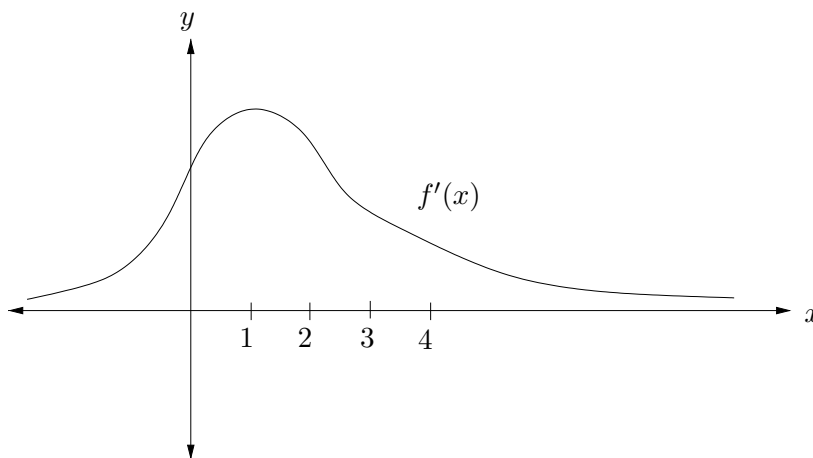**2.** (6 points) Using the graph of $f'(x)$ provided, list the following in increasing order:

$$\int_1^3 f'(x)dx, \qquad f(3) - f(2), \qquad f(2) - f(1)$$



$\underline{f(3) - f(2)}$ less than $\underline{f(2) - f(1)}$ less than $\underline{\int_1^3 f'(x)\,dx}$

**3.** (5 points) **(a)** Briefly explain the difference between the indefinite integral $\int f(x)\,dx$ and the definite integral $\int_a^b f(x)\,dx$.

The indefinite integral is a function and the definite integral is a number.

**(b)** What is the connection between a Riemann sum and one or more of the integrals in part (a)? Your answer should include a picture and a clear explanation.

A Riemann sum is an approximation to the definite integral. One forms rectangles as pictured and adds up the areas to approximate the area under the curve. As the width of the rectangles goes to zero the Riemann sum becomes a better and better approximation to the actual area under the curve.