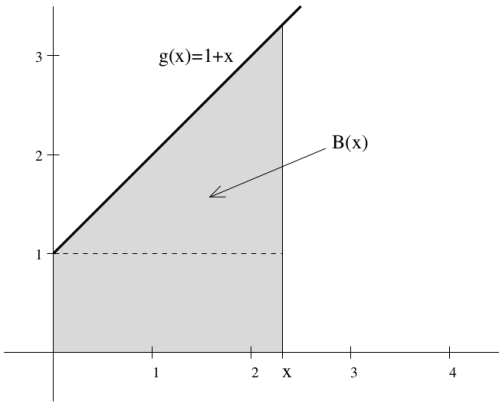
1. As described in figure, define $B(x)$ to be the area bounded by the x-axis and the function $g(x) = 1+x$



between y-axis and the the vertical line at x, with $x > 0$.

   (a) Find $B(1)$, $B(3) - B(2)$ and $B(4)$.

   (b) Find a formula for $B(x)$ for $x > 0$ and $B'(x)$.

2. Define $L(a)$ to be the area bounded by the x-axis and the function $f(x) = \frac{1}{x}$ between the vertical line at $x = 1$, and the vertical line at $x = a$, with $a > 1$.

   (a) Using a rough sketch, slice the area bounded by the x-axis and the function $f(x) = \frac{1}{x}$ between the vertical line at $x = 1$, and the vertical line at $x = 2$ into 4 pieces by drawing 3 evenly spaced vertical lines from the x-axis up to the curve.

   (b) Using the left side of each slice as the height, draw 4 rectangles on your graph. Find the areas of the 4 rectangles and add them up ($\equiv U_1$).

   (c) Using the right side of each slice as the height, draw 4 rectangles on your graph. Find the areas of the 4 rectangles and add them up ($\equiv L_1$).

   (d) Find the average of U_1 and L_1

   (e) Compare all the above answers with ln(2) in your calculator.