Assignment 5

1. Let $f(x) = x^2 + 2x + 1$. Find the derivative of $f(x)$.

2. Find the integral of $e^x$ with respect to $x$.

3. Evaluate the limit $\lim_{x \to 0} \frac{\sin(x)}{x}$.

4. Solve the differential equation $\frac{dy}{dx} = 2y$ with the initial condition $y(0) = 1$.

5. Sketch the graph of $y = \frac{1}{x}$.

6. (Diagram) Label the x and y axes, and sketch a graph of the function $f(x) = \sqrt{x}$ for $x \geq 0$.