Problem 1. Let \( R \) be the region bounded by the curves \( y = \frac{1}{x^2 + 4x + 3} \), \( x = 0 \), \( x = 2 \), and the \( x \)-axis.

i. Sketch and find the area of \( R \).

ii. Find the volume of the solid obtained by rotating \( R \) about the \( y \)-axis.