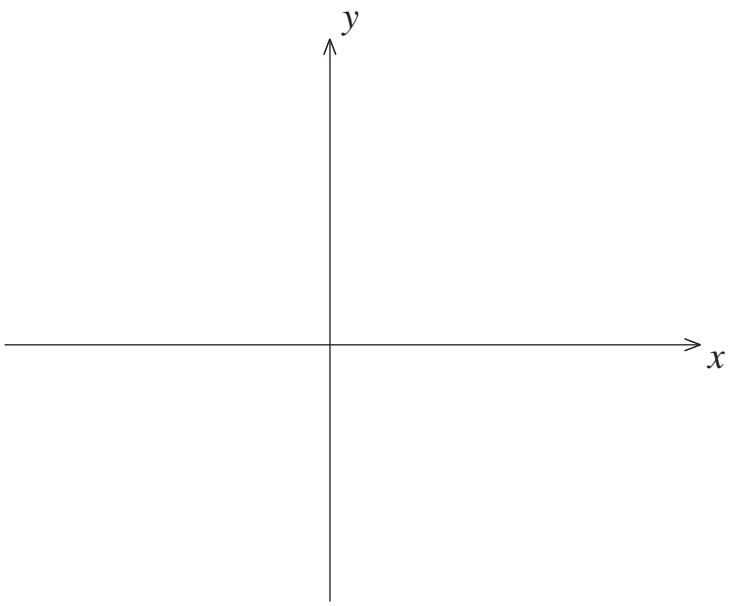
Quiz **Name:**

1. Consider the curve $y = 3x^2 + 1$ for $1 \leq x \leq 2$. Set up a definite integral which expresses the length of this curve. *No need to evaluate the integral.*

2. Sketch the graph of the function $f(x) = \sqrt{16 - x^2}$ in the space below (recall that $x^2 + y^2 = 16$ is the equation of a circle). Sketch on the same graph the region above the x-axis, below the graph of $y = f(x)$ and satisfying $0 \leq x \leq 3$. Set up a definite integral expressing the volume of the solid obtained by revolving this region about the x-axis, and evaluate this integral exactly.



3. Consider the function $f(x) = \sqrt{5^2 - x^2}$. Sketch its graph and compute $f'(x)$. Express the length of the graph from the point $(-5, 0)$ to the point $(0, 5)$ as a definite integral. What is the value of this integral?