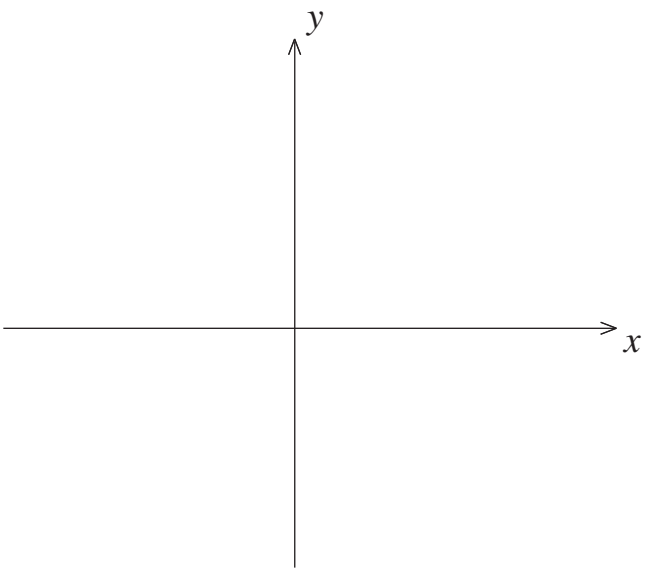
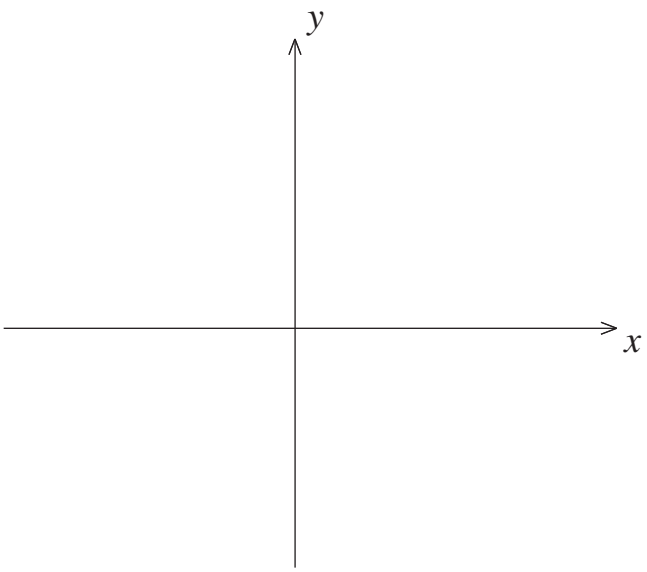
Quiz **Name**

Consider the function $g(x) = 9 - x^2$ with $-1 \leq x \leq 1$.

1. Insert the points $-1 \leq -0.6 \leq -0.2 \leq 0.3 \leq 0.5 \leq 0.8 \leq 1$ on the x-axis between -1 and 1 and compute the sum $g(x) \cdot dx$ that this set of points determines. Do so with three decimal place accuracy. This sum is an approximation of the area under the graph of $g(x) = 9 - x^2$ over $-1 \leq x \leq 1$. Sketch what is going on in the coordinate plane (a).



(a)



(b)

2. This time insert $-1 \leq -0.8 \leq -0.5 \leq -0.30 \leq 0.2 \leq 0.3 \leq 0.4 \leq 0 \leq 0.6 \leq 0.8 \leq 0.9 \leq 1$ between -1 and 1 on the x-axis and compute the sum $g(x) \cdot dx$ that this set of points determines. Do so with three decimal place accuracy. This sum is a tighter approximation of the area under the graph of $g(x) = 9 - x^2$ over $-1 \leq x \leq 1$ than the previous one. Sketch what was done in coordinate plane (b).

3. Use the Fundamental Theorem of Calculus to compute this area precisely.