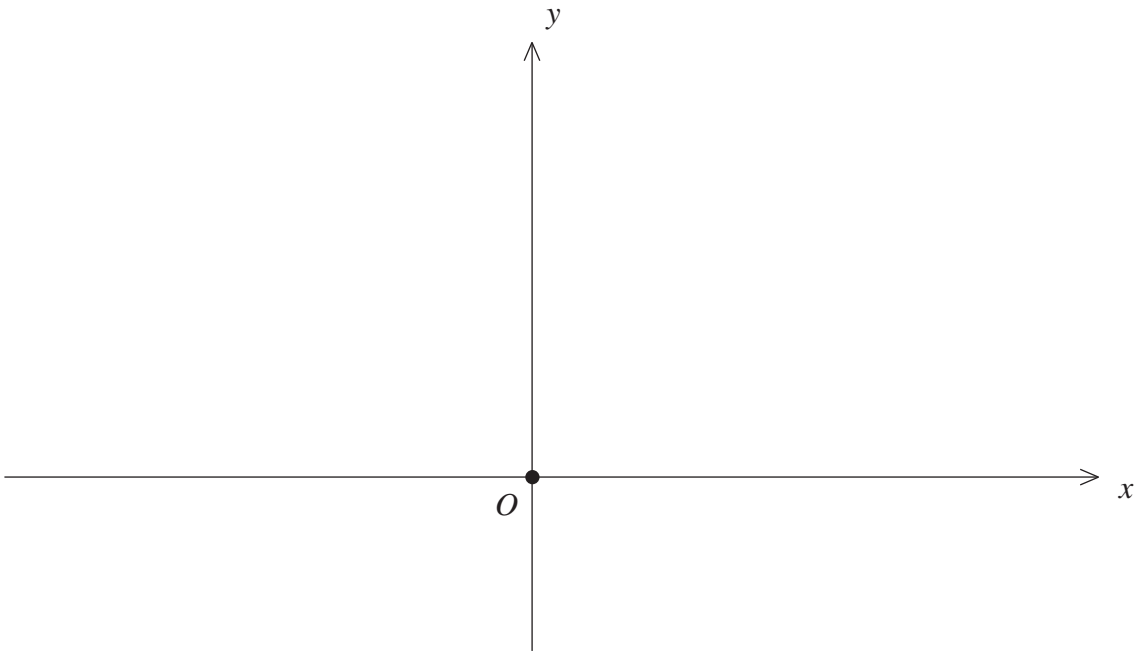
Quiz **Name**

1. Let $f(x)$ be a function that has an inverse $f^{-1}(x)$. Derive the formula $\frac{d}{dx}f(x)^{-1} = \frac{1}{f'(f^{-1}(x))}$.

2. Define the natural logarithm function $g(x) = \ln x$. Draw a careful diagram in the coordinate plane below that the illustration of the definition requires.



3. Use the formula from Problem 1 to show that for $g(x) = \ln(x)$, $\frac{d}{dx}g^{-1}(x) = g^{-1}(x)$. Explain why it follows from this that $g^{-1}(x) = e^x$.