Quiz   **Name**
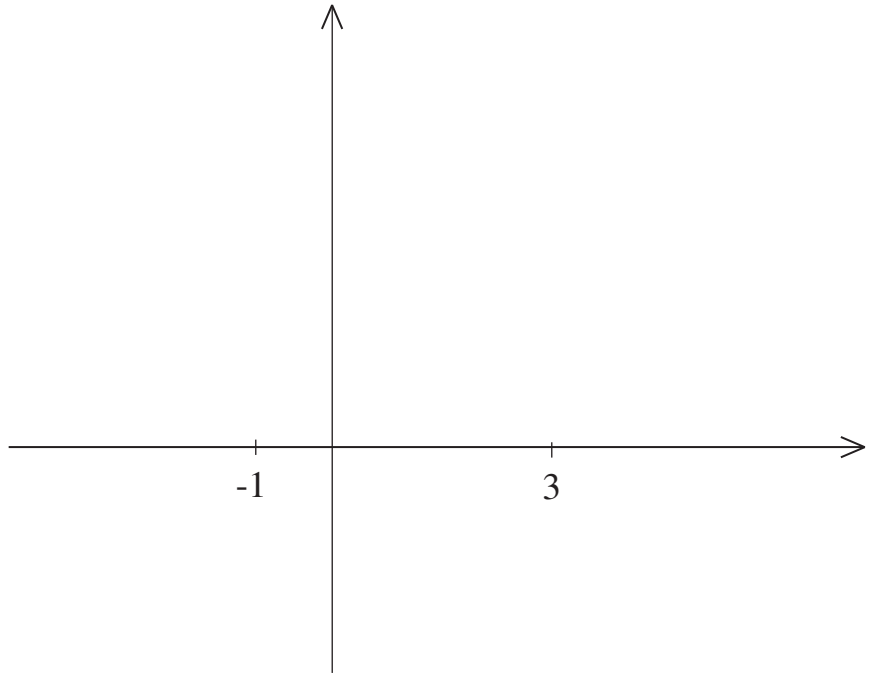
1. Show that the graph of the function $f(x) = x^2 - 2x - 3$ crosses the x-axis at $x = -1$ and $x = 3$. Use what you know about the graph of $y = f(x)$ to *carefully* sketch a graph of $g(x) = |x^2 - 2x - 3|$ in the coordinate plane below. Answer by using properties of the graph: Why is the function not differentiable at $x = -1$ and $x = 3$?

2. Use the graph of the function $g(x) = |x^2 - 2x - 3|$ and the derivative of $f(x) = x^2 - 2x - 3$ to compute the two limits

a) $\displaystyle\lim_{x \to 3+} \frac{g(x) - g(3)}{x - 3} =$

b) $\displaystyle\lim_{x \to 3-} \frac{g(x) - g(3)}{x - 3} =$