**6.** [7 points] For each part below, sketch the graph of a function that satisfies the given properties, or, if there is no function satisfying all the properties in that part, write DNE instead.
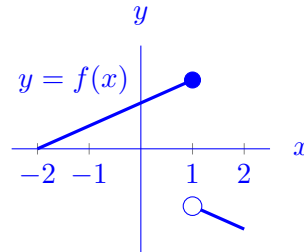
Any graphs you draw should have axes like those shown to the right. Make sure your graphs are clear and unambiguous, with any important values marked on the axes.

Note: If DNE is written, then any graph you have drawn in that part will not be graded.
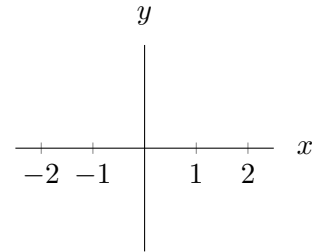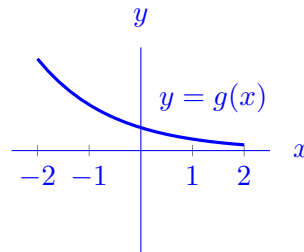
a. [2 points] A function $f(x)$ that satisfies $\lim\limits_{x \to 1^-} f(x) = f(1)$ but that is not continuous at $x = 1$

Solution:

b. [2 points] A function $g(x)$ that is positive on $-2 < x < 2$ and such that $g'(x)$ is negative on $-2 < x < 2$

Solution:

c. [3 points] A continuous function $h(x)$ that is also invertible and that has an average rate of change of zero on the interval $[-1, 1]$

Solution: DNE.

(Note that an average rate of change of zero means $\dfrac{h(1) - h(-1)}{1 - (-1)} = 0$. But if we simplify, this means $h(1) = h(-1)$, so $h(x)$ can't be invertible.)