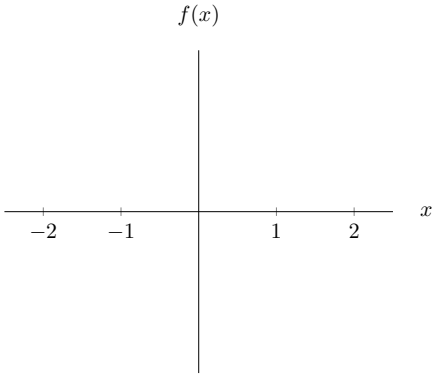
7. [8 points] For each part, draw a function on the given axes that satisfies the given conditions. Or, if no such function exists, write DNE and provide a brief explanation.

Make sure your graphs are unambiguous and that the domain of each graph is clear.

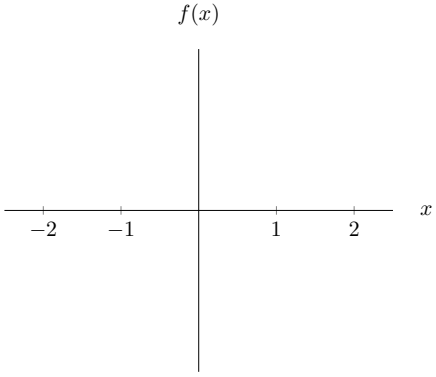
a. [2 points]

A differentiable function $f(x)$ with domain $[-2, 2]$ that has a global maximum at $x = 1$ and $f''(x) \leq 0$.



b. [3 points]

A continuous function $f(x)$ with domain $[-2, 2]$ that has both a local minimum at $x = 1$ and an inflection point at $x = 1$.



c. [3 points]

A continuous function $f(x)$ with domain $(-2, 2)$ that has exactly one critical point and no global extrema. Note that this domain differs from those in previous parts.