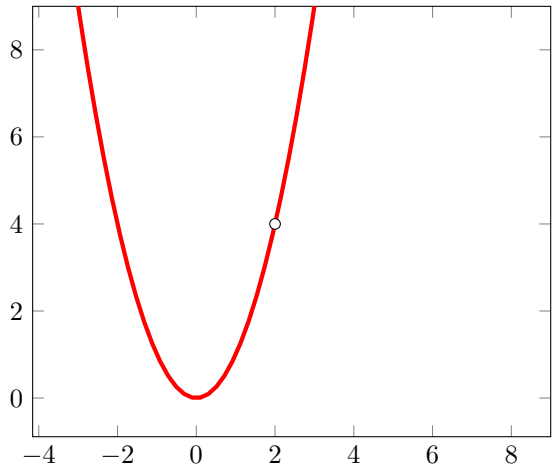
Limits

We say the limit of $f(x)$ is L as x approaches a and we write this as

$$\lim_{x \to a} = L$$

provided we can make $f(x)$ as close to L as we want for all x sufficiently close to a from both sides, without actually letting x be a.

- In simple terms, $f(x)$ gets close to some limit as x gets close to some value.
- Limits describe the behavior of a function as x approaches a particular value.
- Limits do not depend on the actual value of the function at the limit. They describe how the function behaves when it gets close to a limit. A limit L can exist at a even though the function is not defined where $x = a$.
- When a lmit does not approach the same value from both the left and right sides, the limit does not exist.
- If a limit is unbounded (approaches infinity) we say that it does not exist.
- Three ways to Evaluate a limit:
  - Algebra (simplify by factoring, conjugates, or trig ident)
  - Table of values
  - Graph
- Here's an example: $\lim_{x \to 2} f(x) = 4$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