

Prereq Review for Calc I

Here are a few problems you should try in order to reacquaint yourself with a bit of precalculus math and familiarize yourself with our notation in Calculus I.

The problems

1. Define two intervals in set theoretic notation as

$$A = \{x \in \mathbb{R} : -1 < x \leq 2\} \text{ and } B = \{x \in \mathbb{R} : -3 < x \leq 1\}.$$

Draw the set $S = A \cap B$ on the set of axes shown in Figure 1. Note that S should be an interval; be sure to indicate whether the endpoints are half-open or half closed.

2. Write down the half open interval shown in Figure 2 in set theoretic notation.
3. Let $I = \{x \in \mathbb{R} : 0 \leq x < 4\}$ and define $f : I \rightarrow \mathbb{R}$ by $f(x) = \frac{1}{2}(x^2 - 3x)$. Sketch the graph of f on the empty axes in Figure 3.
4. Find an equation for the line containing the points $(-1, -1)$ and $(5, 2)$.
5. Simplify the rational expression

$$\frac{x^3 - 2x^2 + 2x - 1}{x - 1}$$

to a polynomial. Be sure to explain your work, indicating:

- a. How the numerator factors and
- b. Any assumptions that must be made for the original rational expression to equal a polynomial

Figures

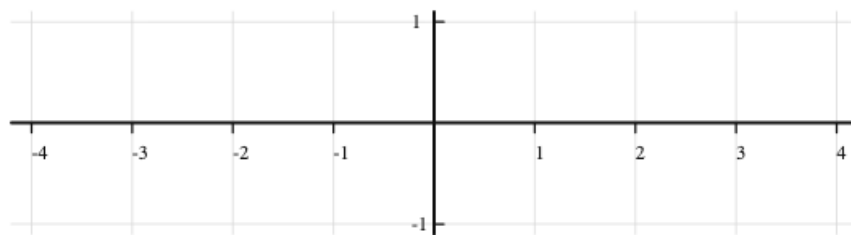


Figure 1: Empty axes

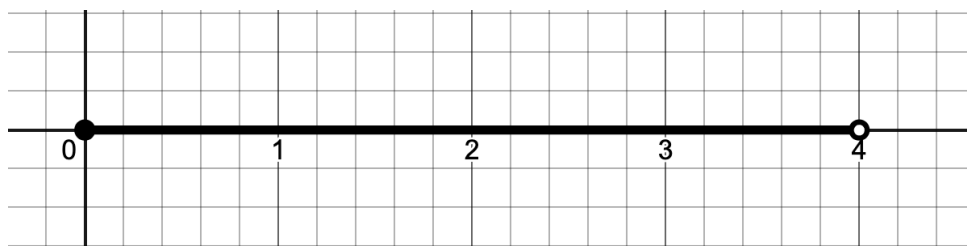


Figure 2: A half-open interval

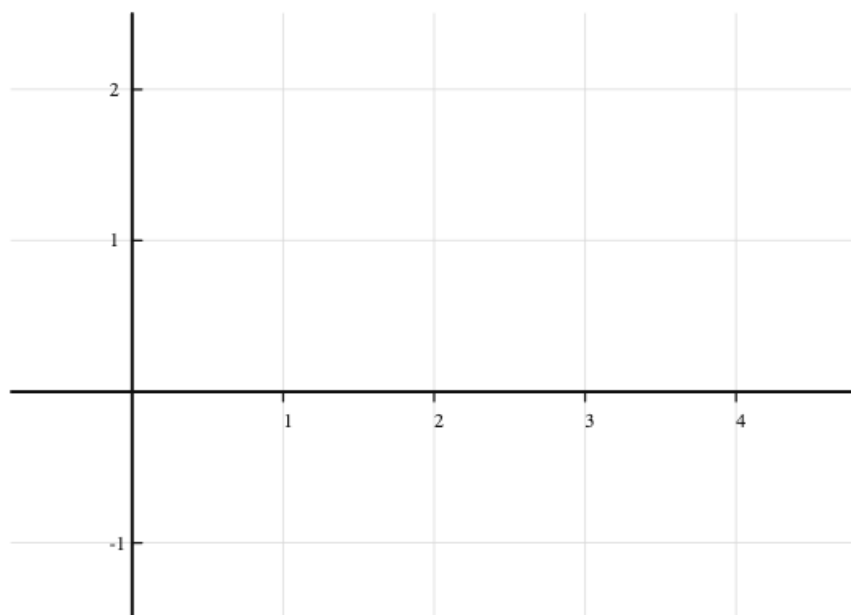


Figure 3: More empty axes