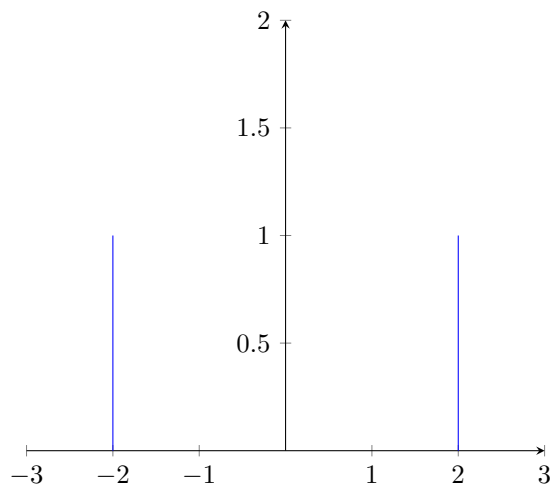


MATH 350 Assignment 1 Solutions

Dylan Scofield

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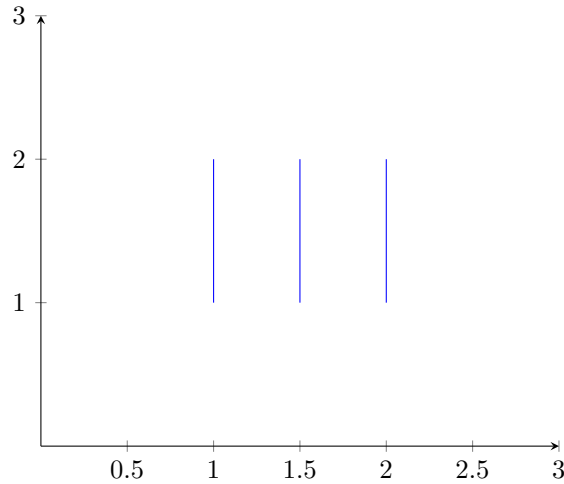
1.43



1.2.6

$\{\{0, 1\}, \{(1, 1)\}\}$

1.2.13



1.3.6

$\emptyset, \{\mathbb{R}\}, \{\mathbb{Q}\}, \{\mathbb{N}\}, \{\mathbb{R}, \mathbb{Q}\}, \{\mathbb{R}, \mathbb{N}\}, \{\mathbb{N}, \mathbb{Q}\}, \{\mathbb{R}, \mathbb{Q}, \mathbb{N}\}$

1.3.15

True

Explanation:

To show that a set is a subset of another set we need to show that *every* element from the first is an element in the second. Let us start by listing the elements of the first set.

$$x - 1 = 0 \implies x = 1.$$

Thus $(1, y)$ is an element of our first set. Now we need to show that this element is in our second set, so let us plug it in.

$$(1)^2 - 1 = 0 \implies 0 = 0.$$

This is true, so $(1, y) \in \{(x, y) : x^2 - x = 0\}$.

Therefore we get $\{(x, y) : x - 1 = 0\} \subset \{(x, y) : x^2 - x = 0\}$ as every element in the first is in the second.

1.4.8

$$\mathcal{P}(A \times B) = \left\{ \emptyset, \{(1, 3)\}, \{(2, 3)\}, \{(1, 3), (2, 3)\} \right\}$$

1.4.11

$$\left\{ \emptyset, \{\emptyset\}, \{\{1\}\}, \{\{2\}\}, \{\{3\}\}, \{\{1, 2\}\}, \{\{1, 3\}\}, \{\{2, 3\}\}, \{\{1, 2, 3\}\} \right\}$$