**Exercise 1**

1. For set {1, 3, 5, 7, 9, 11} then |set| = 6. The set is a finite number, so no element is ambiguous.

2. For set { rock, paper, scissors } then |set| = 3. The set has 3 elements and is not numbers. It is ambiguous because I do not know whether the elements are words (string) or name of variables.

3. For set {1, 1, 1, 1} then |set| = 4, since there are 4 elements in the set. It is finite numbers.

**Exercise 2**

Set X

Set Y

First Venn diagram represents a join/ a union, so every element in each set is included in the join.

E.g.: for set A = {1,2,3} and set B = {2,3,4}, when joined, the new set will be set C = {1,2,3,2,3,4}

Second Venn diagram represents an intersection, so only elements that exists in both sets are included when the set is combined.

E.g.: for set A = {1,2,3} and set B = {2,3,4}, when combined, the new set will be set C = {2,3}

**Exercise 3**

1. 5 = sets N, Z, Q, R

2. 0.5 = sets Q, R

3. −15 = sets Z, Q, R

4. 4 − 7i = sets N, Z, R

5. 2π = set R

6. -3/7 = sets Z, Q, R

7. −3/π = sets Z, Q, R

**Exercise 4**

This is known as the “Russell Paradox2, or the “Barber Paradox”, in which it identifies the problem of a limitation in symbolic logic. In the paradox, per the “rules” laid out, no such barber can exist and so the problem has no solution. Russell further argued this paradox can happen because a description of sets of numbers is often confused with a description of sets of sets of numbers. As a workaround, he introduced a hierarchy of objects: numbers, sets of numbers, sets of sets of numbers, etc, which is still used in branches of computer science.

I would address this problem by first understanding the “rules” or the definitions laid out. I’m breaking them down for clarity.

1. There is a group of barbers.
2. In the group, the barbers only shave those who do not shave themselves (are we assuming that the barbers themselves shave themselves or no?)
3. By the third definition, we discover that every barber in the group DOES shave himself, with the exception of 1 barber.
4. Referencing back to the second definition, we can deduce that he therefore must shave himself.
5. But if he shaves himself, he cannot be a barber any longer.
6. If he refuses to shave himself in order to maintain definition number 2, then he belongs to the group who would be shaved by barbers, so – as a barber himself, he must shave himself.

Now that I understood the definitions and the limitations, I agree with Russell that a distinction must be made in the description of a set (a group of barbers) and a set of a set (a group of barbers who shave themselves and a group of one individual barber who does not shave himself).

I also agree that the most logical workaround will be establishing hierarchies of sets/groups (or more generally: definitions and descriptions).

Reports:

Order Summary (ticket 573)

Fabrics to Despatch (ticket 683)

Furniture to Despatch (ticket 683)

Lights to Despatch (ticket 683)

Wallpaper to Despatch (ticket 683)

Sales Summary (ticket 616)

Sales by Nominal (ticket 616)

Sales by Product (ticket 616)