MAT2611

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Assignment 1

**Problem 1**

**Addendum A - Exercise 2.21**

1. Determine

2. Determine

3. Determine

Remember that:  
 *number of elements in*

*number of elements in the empty set*

*number of elements in the powerset*

*number of elements in the empty set*

1.

2.

3.

**Addendum A - Exercise 3.4**

For each of the following functions determine the image of

1. defined by .

2. defined by .

3. defined by .

*Identify all elements of*

1.

Therefore, the Image of is

2.

Therefore, the Image of is

3.

Therefore, the Image of is

**Problem 2**

**Addendum A - Exercise 3.11**

Consider the following two functions. Prove that both and are one-to-one correspondences.

1. defined by

1. defined by

Let be a one-to-one correspondence. Then to each there corresponds a unique such that . We define by

the unique such that

**Addendum A - Exercise 3.12**

Let be a one-to-one correspondence.

1. Prove that is a function.

2. Prove that is a one-to-one.

3. Prove that is onto.

4. Conclude that is a one-to-one correspondence.