MAT 243 Online Written Homework Assignments for Week 3 (units 6-9)

1. The power set of S = {1} has 2 elements, namely P(S) = {{}, {1}}. The power set of the power set of S, P(P(S)), has 4 elements, namely P(P(S)) = {{}, {{}}, {1}, {{}, 1}}.
2. The image of f(x) = on (-1, 2] is [0, 2). The preimage of f(x) = on (0,1] is [0, 1).
3. In order for f(x) to be bijective, f(x) has to be both injective and surjective.

Check for injectivity:

ℝ

by definition of

Subtracting 1 from both sides yields

Check for surjectivity:

ℝ

ℝ |

Therefore, f(x) is bijective.

1. Check for injectivity:

ℕ

Subtracting 1 from both sides yields

Check for surjectivity:

ℕ|

ℕ

1. ∞)

∞)

∞

Therefore, f(x) is bijective.

1. = + + … + +