

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

Free Response Questions

1. Find the power set of the power set of $S = \{1\}$.
2. If f is the absolute value function on the real numbers, find
 - a. the image of $(-1, 2]$
 - b. the preimage of $(0, 1]$.
3. Prove that the function $f: [0, 1] \rightarrow [1, 2]; f(x) = x + 1$ is bijective.
4. Prove that the function $f: \mathbb{N} \rightarrow \mathbb{N}; f(n) = n + 1$ is not bijective.
5. Let $S = \mathbb{R} - \{0\}$. Prove that the function $f: S \rightarrow S; f(x) = \frac{1}{x}$ is bijective.
6. Evaluate the sum and simplify as much as possible:

$$\sum_{n=100}^{200} \frac{5^{2n+3}}{3^{2n+1}}$$

Show all your work. Calculator answers are unacceptable.