Homework 11 Due: November 24, Friday

1. Section 12.5, #4 (You need to identify the domain and the codomain of the inverse function)

2. Section 12.5, #8

3. (a) Prove: \( \forall n \in \mathbb{Z}, \frac{(-1)^n(2n - 1) + 1}{4} \in \mathbb{Z} \).

   (b) Is the function \( g : \mathbb{Z} \to \mathbb{Z} \) defined by

   \[
   g(n) = \frac{(-1)^n(2n - 1) + 1}{4}
   \]

   bijective? Justify your answer.

   (c) Prove that the function \( f : \mathbb{N} \to \mathbb{Z} \) defined by

   \[
   f(n) = \frac{(-1)^n(2n - 1) + 1}{4}
   \]

   is bijective. Find the inverse function \( f^{-1} \).

4. Section 12.6, #2

5. Section 12.6, #6

6. Section 12.6, #8

7. Section 12.6, #10

8. Section 12.6, #12