Question 10:

Let **P(n) ⬄ plus Zero n = n** for any n ∈ Nat

**Base case:**

It is true that **plus Zero Zero = Zero (equivalent to 0 + 0 = 0)** because **plus m Zero = m**

Which is our base case P(0).

**Induction Hypothesis:** Assume P(n)

**Induction**

If **n** is in **P(n)** then **Succ(n)** will be **n+1** in **P(n+1).**

Notice that **plus Zero (Succ(n)) = Succ(plus Zero n)**

whereas **plus Zero n** is our assumption.

Thus ***P*(*n*) *⇒ P*(*n* + 1)**. Alternatively: Thus ***P*(*n* + 1)**

**Conclusion:** By the PMI ∀n ∈ Nat; P(n)

Question 11: