For each of the following, provide either supporting examples or counterexamples to support your answer.

1. Consider the following set of numbers: 
   \{1, 2, 3, 4, \ldots\}
   a. Is the set of numbers closed under...
   
      i. Addition? 
      
      ii. Subtraction? 
      
      iii. Division? 
      
      iv. Multiplication?

2. Consider the set of whole numbers \{0, 1, 2, 3, 4, \ldots\}
   a. Is the set closed under...
      
      i. Subtraction? 
      
      ii. Division?

3. Consider the set of integers \{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}
   a. Is the set closed under...
      
      i. Addition? 
      
      ii. Multiplication? 
      
      iii. The square root operation? 
      
      iv. The factorial operation?