Answers

1. Does the set B and the operation `⊕` satisfy the group properties ?
   Yes

2. Is it true that all odd squares are ≡ 1 (mod 8) ?
   Yes

   Even squares (mod 8)
   No, for example 4^2

3. *1. O(n) this means that in the worse case the time is linear w.r.t. the input size*
   2. O(1) - here the time is constant, no matter what the input size
   3. O(log n) - here the time varies according to the log of the input size

4. *For a proof size we would like O(1)*