3. $S \leftarrow (x_1, x_2, \ldots, x_n)$
   if !$\text{BlackBox}(S, q)$ return (failure) $O(1)$
   for ($i = 1; i \leq n; i++$) $n$ times
     $S \leftarrow S - \{x_i\}$
     if !$\text{BlackBox}(S, q)$ /*we really need $x_i$; put it back*/
       $S \leftarrow S \cup \{x_i\}$
   return $S$; $O(1)$

Since the body of the loop is executed in time in $O(1)$, the time to execute the loop (and the program) is in $O(n)$. 