14. (i) A student states

"if x^2 is greater than 9 then x must be greater than 3"

Determine whether or not this statement is true, giving a reason for your answer.

(1)

(ii) Prove that for all positive integers n,

$$n^3 + 3n^2 + 2n$$

is divisible by 6

(3)

(i)   If x is $-ve$ eg -5 then $x^2 = 25$ so $x^2 > 9$
       But x is -5 which is less than 3.
       So the statement is false.

(ii)   Factorise $n^3 + 3n^2 + 2n$
              $n(n^2 + 3n + 2)$
              $n(n+1)(n+2)$.
       So the given expression is the product of
       3 consecutive numbers.

       So of these 3 number one is bound to be a
       multiple of 2 and another is bound to be a multiple
       of 3.
          So the numbers multiplied together must be
       a multiple of 6.