we need to prove that

This sign shows that

The sign shows that

when n(n+1) is divisor.

# clearly if n(n+1) divides the expression then n(n+1)
also divides it.

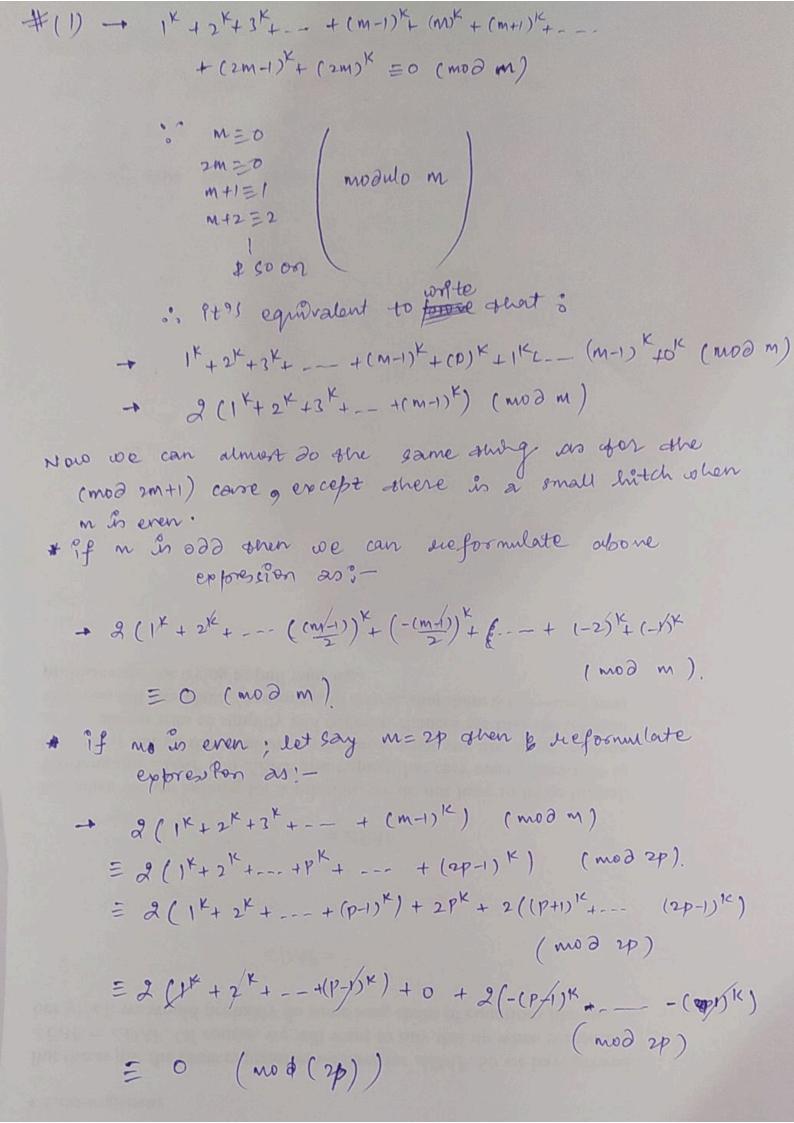
(factor 2) × (factor 2) | (expression)

os both the factor (n) & (n+1) are coprimes; it is equivalent to proving both of;

(factor 1) | (expression) & (factor 2) | (expression)

seperately.

```
If To deal with that we will break up into cases, depending on whether or is even or odd.
    Both cases are similar, I will do when n'is even;
         let n=2m
       Réplace let les our prévious eques que get;
        1^{k} + 2^{k} + 3^{k} + - - + (2m)^{k} \equiv 0 \pmod{m(2m+1)}
        is m & 2M+1 are coposiones, 9295 equivalent proving that's
          |K+2K+--+(2m)K=0\pmod{m}-(1)
          |x+2x+--+(2m)^{k}=0 \pmod{2m+1}-(2)
  #(2) - : K is odd & 2M = -1 (mod 2M+1)
                                2m-1 = -2 (mod 2m+1)
                                   2 0000
            · · · | K+2K+ -- (2m) K = | K+2K+ -- + mk+(-m)K--+ (-2)+(-1)K
                                                            (mod 2m+1)
            =) \quad | 1^{1} + 2^{1} + - (2^{1})^{1} = 1 + 2^{1} + - - \sqrt{1 + (-1)^{1}} + - (-1)^{1} + (-1)^{1}
                                                     (mod 2m+1).
                  · · K 2000.
            60 a eq 7 (2) is proved.
```



Regardlen of whether m is odd er eveng se have proved that is

1K+2K+--+nK is divisible by n(n+1) if n is ever.

Gimilar is the proof, when n isodd.