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HW 21

18.5.21

(1)

$M(n) = \sum_{i=1}^n M(i)$  for  $1 \leq n \leq 20$

- $M(1) = 1$     $M(5) = -1$     $M(9) = 0$     $M(13) = -1$     $M(17) = 1$
- $M(2) = -1$     $M(6) = 1$     $M(10) = 1$     $M(14) = 1$     $M(18) = 0$
- $M(3) = -1$     $M(7) = 1$     $M(11) = -1$     $M(15) = 1$     $M(19) = 1$
- $M(4) = 0$     $M(8) = 0$     $M(12) = 0$     $M(16) = 0$     $M(20) = 0$

I meant to write  $M(i)$  not  $M(i)$

- $M(1) = 1$     $M(6) = 1$     $M(11) = -2$     $M(16) = -1$
- $M(2) = 0$     $M(7) = -2$     $M(12) = -2$     $M(17) = -2$
- $M(3) = -1$     $M(8) = -2$     $M(13) = -3$     $M(18) = -2$
- $M(4) = -1$     $M(9) = -2$     $M(14) = -2$     $M(19) = -3$
- $M(5) = -2$     $M(10) = -1$     $M(15) = -1$     $M(20) = -3$

$n=4 = 2+2$	$n=10 = 5+5$	$n=16 = 3+13$	$n=22 = 11+11$	$n=28 = 11+17$
$n=6 = 3+3$	$n=12 = 5+7$	$n=18 = 5+13$	$n=24 = 11+13$	$n=30 = 13+17$
$n=8 = 3+5$	$n=14 = 7+7$	$n=20 = 7+13$	$n=26 = 13+13$	

(3)  $(3,5), (5,7), (11,13), (17,19), (29,31)$

(4) Even  $\frac{n}{2}$  }  $n=2 \rightarrow 1$   $\Rightarrow$   $n=6 \rightarrow 8 \dots$   
 odd  $\frac{n+1}{2}$  }  $n=3 \rightarrow 10 \rightarrow 5 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$   $n=7 \rightarrow 52 \rightarrow 26$   
 $n=4 \rightarrow 2 \rightarrow 1$   $n=8 \rightarrow 9 \dots$   
 $n=5 \rightarrow 16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$   $n=9 \rightarrow 25 \rightarrow 14 \rightarrow 7 \dots$   
 $n=6 \rightarrow 3 \dots$   $n=10 \rightarrow 5 \dots$   
 $n=7 \rightarrow 22 \rightarrow 11 \rightarrow 34 \rightarrow 17 \rightarrow 52 \rightarrow 26 \rightarrow 13 \rightarrow 40 \rightarrow 20 \rightarrow 10 \rightarrow 5 \dots$   
 $n=8 \rightarrow \dots$   
 $n=9 \rightarrow 27 \rightarrow 14 \rightarrow 7 \dots$   
 $n=10 \rightarrow 5 \dots$   
 $n=11 \rightarrow 34 \dots$   
 $n=12 \rightarrow 6 \rightarrow 3 \dots$   
 $n=13 \rightarrow 4 \dots$   
 $n=14 \rightarrow 7 \dots$   
 $n=15 \rightarrow 46 \rightarrow 23 \rightarrow 10 \rightarrow 35 \rightarrow 16 \rightarrow 53 \rightarrow 160 \rightarrow 80 \rightarrow 40 \rightarrow 20 \rightarrow 10 \dots$