

NAME: Tianyi He

E-MAIL ADDRESS: th586@scarletmail.rutgers.edu

It is OK to post the homework in your web-site

1.  $n$ : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

$M(n)$ : 1 -1 -1 0 -1 1 -1 0 0 1 -1 0 -1 1 1 0 -1 0 -1 0

$M(n)$ : 1 0 -1 -1 -2 -1 -2 -2 -2 -1 -2 -2 -3 -2 -1 -1 -2 -2 -3 -3

2.  $4 = 2+2$ ,  $6 = 3+3$ ,  $8 = 3+5$ ,  $10 = 5+5$ ,  $12 = 5+7$ ,  $14 = 7+7$ ,  $16 = 5+11$ ,  
 $18 = 7+11$ ,  $20 = 13+7$ ,  $22 = 11+11$ ,  $24 = 11+13$ ,  $26 = 13+13$ ,  $28 = 23+5$ ,  $30 = 23+7$

3.

3, 5; 5, 7; 7, 11; 11, 13; 13, 17; 17, 19; 19, 23; 23, 29

4.  $n=2$ ,  $2 \rightarrow 1$

$n=4$ ,  $4 \rightarrow 2 \rightarrow 1$

$n=6$ ,  $6 \rightarrow 3 \rightarrow 5 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=8$ ,  $8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=10$ ,  $10 \rightarrow 5 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=12$ ,  $12 \rightarrow 6 \rightarrow 3 \rightarrow 5 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=14$ ,  $14 \rightarrow 7 \rightarrow 11 \rightarrow 17 \rightarrow 26 \rightarrow 13 \rightarrow 20 \rightarrow 10 \rightarrow 5 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=16$ ,  $16 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=18$ ,  $18 \rightarrow 9 \rightarrow 14 \rightarrow 7 \rightarrow 11 \rightarrow 17 \rightarrow 26 \rightarrow 13 \rightarrow 20 \rightarrow 10 \rightarrow 5 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$

$n=20$ ,  $20 \rightarrow 10 \rightarrow 5 \rightarrow 8 \rightarrow 4 \rightarrow 2 \rightarrow 1$