

Homework 21

Daniel Rogers
dmr336 - ...

due 12/5

Please do not post my solutions.

1.

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

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

2.

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

3. $(3, 5), (5, 7), (11, 13), (17, 19)$
 ($(29, 31)$ is $\frac{1}{2}$ less than 30)

4

2 even	3 odd	$\frac{8}{2} = 4$ even
$\frac{2}{2} = 1$	$3(3) + 1 = 10$ even	$\frac{4}{2} = 2$ even ... see 2
	$\frac{10}{2} = 5$ odd	
	$3(5) + 1 = 16$ even	
	$\frac{16}{2} = 8$ even	

4 even

$$4\frac{1}{2} = 2 \text{ even... } \underline{\text{see 2}}$$

5 odd... see 5 (within 3)

6 even

$$6\frac{1}{2} = 3 \text{ odd... } \underline{\text{see 3}}$$

7 odd

$$3(7)+1 = 22 \text{ even}$$

$$22\frac{1}{2} = 11 \text{ odd}$$

$$3(11)+1 = 34 \text{ even}$$

$$34\frac{1}{2} = 17 \text{ odd}$$

$$3(17)+1 = 52 \text{ even}$$

$$52\frac{1}{2} = 26 \text{ even}$$

$$26\frac{1}{2} = 13 \text{ odd}$$

$$3(13)+1 = 40 \text{ even}$$

$$40\frac{1}{2} = 20 \text{ even}$$

$$20\frac{1}{2} = 10 \text{ even... } \underline{\text{see 10}} \text{ (within 3)}$$

8 even... see 8 (within 3)

9 odd

$$3(9)+1 = 28 \text{ even}$$

$$28\frac{1}{2} = 14 \text{ even}$$

$$14\frac{1}{2} = 7 \text{ odd... } \underline{\text{see 7}}$$

10 even ... see 10 (within 3)

11 odd ... see 11 (within 7)

12 even

$\frac{12}{2} = 6$ even ... see 6

13 odd ... see 13 (within 7)

14 even ... see 14 (within 9)

15 odd

$3(15)+1 = 46$ even

$\frac{46}{2} = 23$ odd

$3(23)+1 = 70$ even

$\frac{70}{2} = 35$ odd

$3(35)+1 = 106$ even

$\frac{106}{2} = 53$ odd

$3(53)+1 = 160$ even

$\frac{160}{2} = 80$ even

$\frac{80}{2} = 40$ even ... see 40 (within 7)

16 even ... see 16 (within 3)

17 odd ... see 17 (within 7)

18 even
 $18/2 = 9$ odd ... see 9

19 odd
 $3(19)+1 = 58$ even
 $58/2 = 29$ odd
 $3(29)+1 = 88$ even
 $88/2 = 44$ even
 $44/2 = 22$ even ... see 22 (within 7)

20 even ... see 20 (within 7)