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Summary: Quadratic Recursive Formulas

x	f(x)
-3	48
-2	22
-1	6
0	0
①	4
②	18
③	42

1st differences: -26, -16, -6, +4, +14, +24

2nd differences: +10, +10, +10, +10

2nd differences are constant

what we add to go from (-1) term to (0) term

$$f(x) = f(x-1) + 10x - 6$$

2nd differences (slope)

1st differences are what we add to get the next term (this is what we need for the recursive rule)
How can we find this # from x?

$$f(x) = f(x-1) + (10x - 6);$$

x	f(x)
-3	18
-2	8
-1	2
0	0
1	2
2	8
3	18

1st differences: -10, -6, -2, +2, +6, +10

2nd differences: +4, +4, +4, +4

$$f(x) = f(x-1) + 4x - 2; f(0) = 0$$

2nd difference from -1 to 0

1st M2 Summary: Quadratic Recursive Equations

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Summary: Quadratic Recursive Equations

x	f(x)
-3	48
-2	22
-1	6
0	0
①	4
②	18
③	42

1st differences: -26, -16, -6, +4, +14, +24

2nd differences: +10, +10, +10, +10

2nd differences are the same so quadratic

1st differences are what I need for recursive rule

$$f(x) = f(x-1) + 10x - 6; f(0) = 0$$

slope is the 2nd differences

y-int. is the 1st difference from "-1" to "0" term

x	f(x)
-3	18
-2	8
-1	2
0	0
1	2
2	8
3	18

$$f(x) = (f(x-1)) + 4x - 2$$

$$f(3) = f(2) + 4(3) - 2$$

$$f(3) = 8 + 10$$

$$f(3) = 18$$

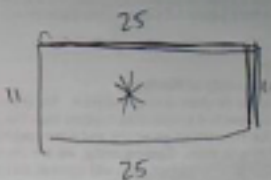
3rd M2 Summary: Quadratic Recursive Equations

3rd M2 1.4

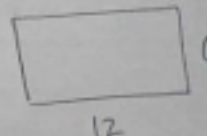
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1.4 (Task)

L	W
28	14
30	6
16	20
17	19
24	12
35	12
25	11
35	1
5	31
63	9
32	4
36	6
20	16
18	4
26	11
12	6
36	2

$L + w = 36$

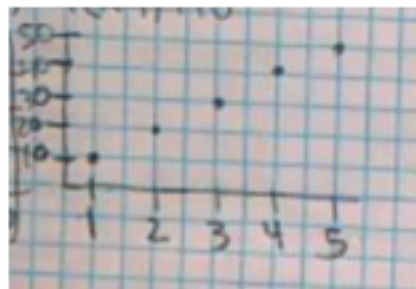


L	W
1	35
2	34
3	33



1.

1	10
2	20
3	30
4	40
5	50



6th M1 1.7

$$f(x) = f(x-1) + 10$$

$$f(1) = 10$$

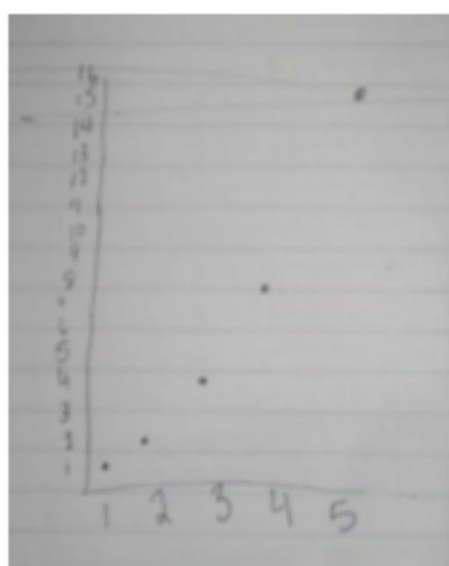
$$f(x) = 10$$

$$\textcircled{4} \text{ Explicit } f(x) = x \cdot 10$$

2. $f(30) = 300$

3.

1	1
2	2
3	4
4	8
5	16



6th M1 1.7

5.

$$f(x) = f(x-1) \times 2$$