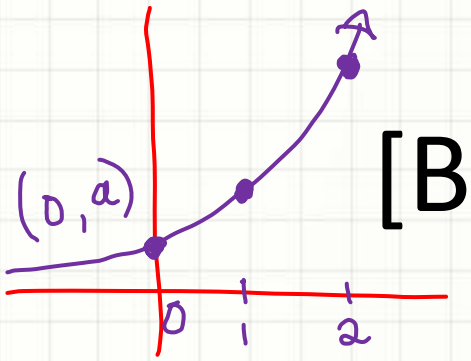
Math Analysis

Mr. Farrar

Catalyst

$f(x) = a \cdot b^x$



[B]

Find an exponential function that fits:

1. (0, 5) (1,10)

$ab^0 = 5$, $a = 5$

$ab^1 = 10$, $5b = 10$, $b = 2$

$f(x) = 5 \cdot 2^x$

2. (0,5) (2, 45)

$a = 5$

$5 \cdot b^2 = 45$, $b^2 = 9$, $b = 3$

$5 \cdot 3^x$

3. (1, 36) (3, 9)

$ab^1 = 36$, $a \cdot \frac{1}{2} = 36$, $a = 72$

$ab^3 = 9$, $ab \cdot b^2 = 9$

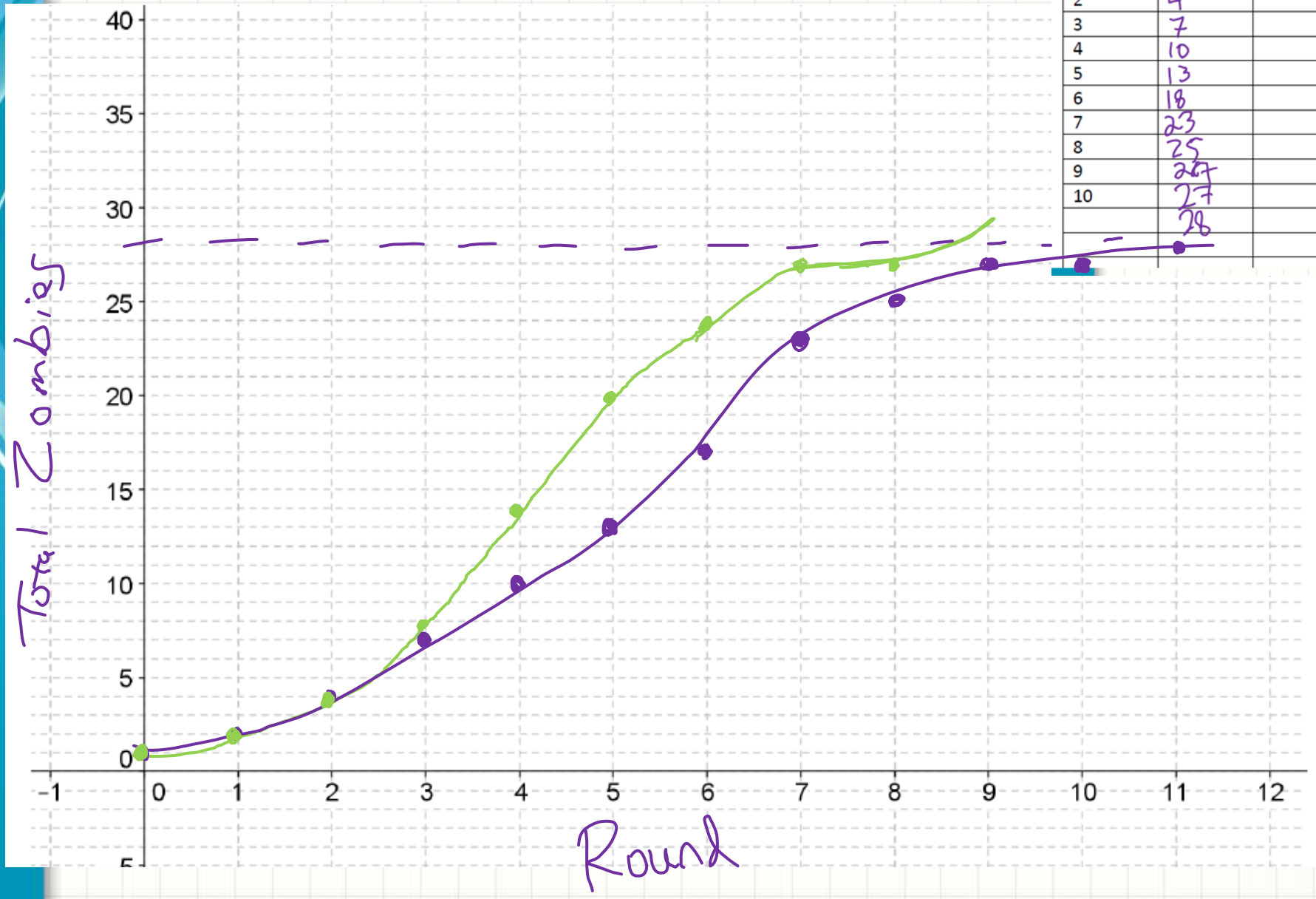
$36b^2 = 9$, $b^2 = \frac{1}{4}$, $b = \frac{1}{2}$

$f(x) = 72\left(\frac{1}{2}\right)^x$

1. Classroom Zombie Data

Trial One

Round #	Zombies	new infections
0	1	
1	2	1
2	4	
3	7	
4	10	
5	13	
6	18	
7	23	
8	25	
9	27	
10	27	
	28	



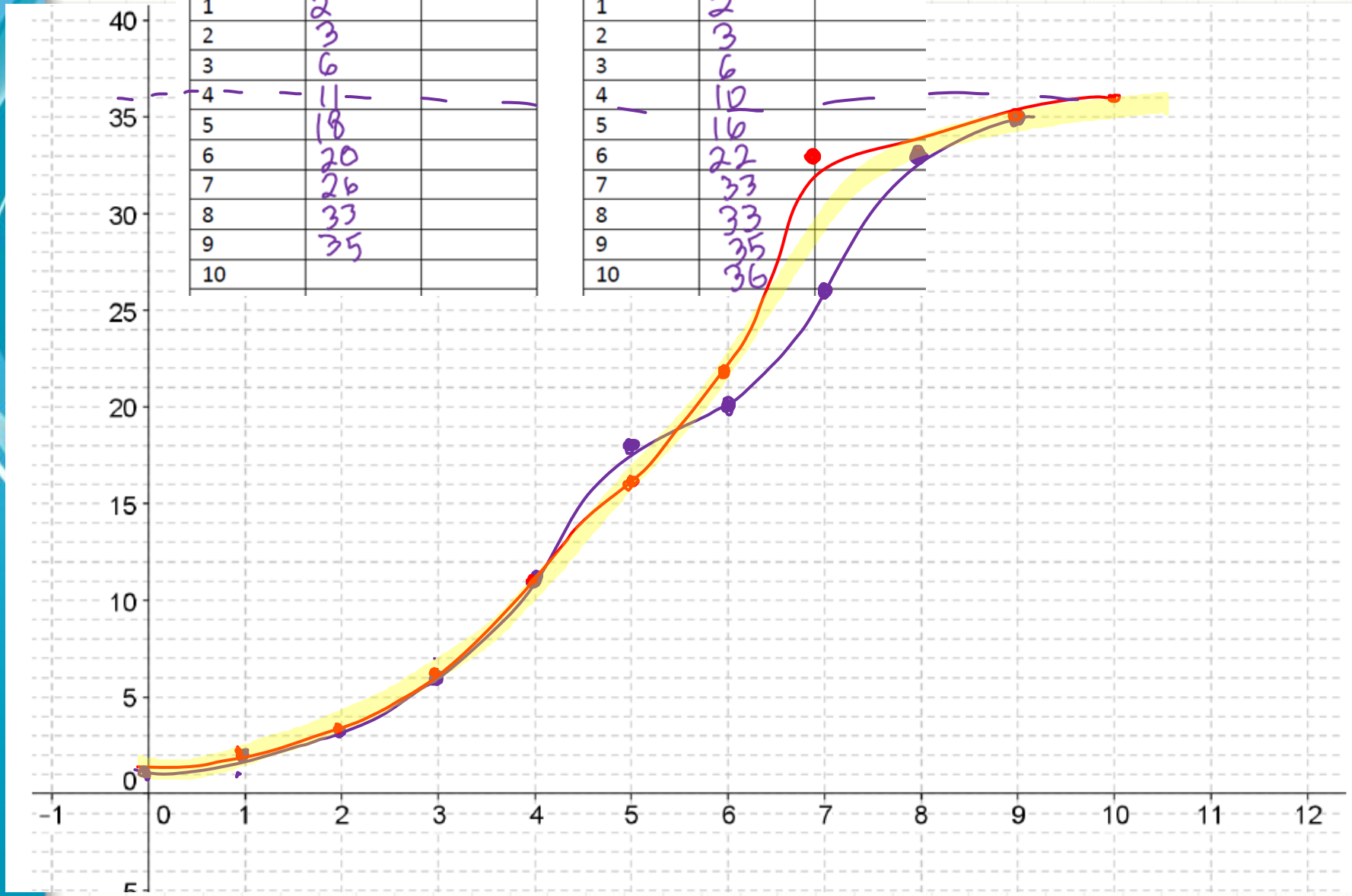
1. Classroom Zombie Data

Trial One

Round #	Zombies	
0	1	
1	2	
2	3	
3	6	
4	11	
5	18	
6	20	
7	26	
8	33	
9	35	
10		

Trial Two

Round #	Zombies	
0	1	
1	2	
2	3	
3	6	
4	12	
5	16	
6	22	
7	33	
8	33	
9	35	
10	36	



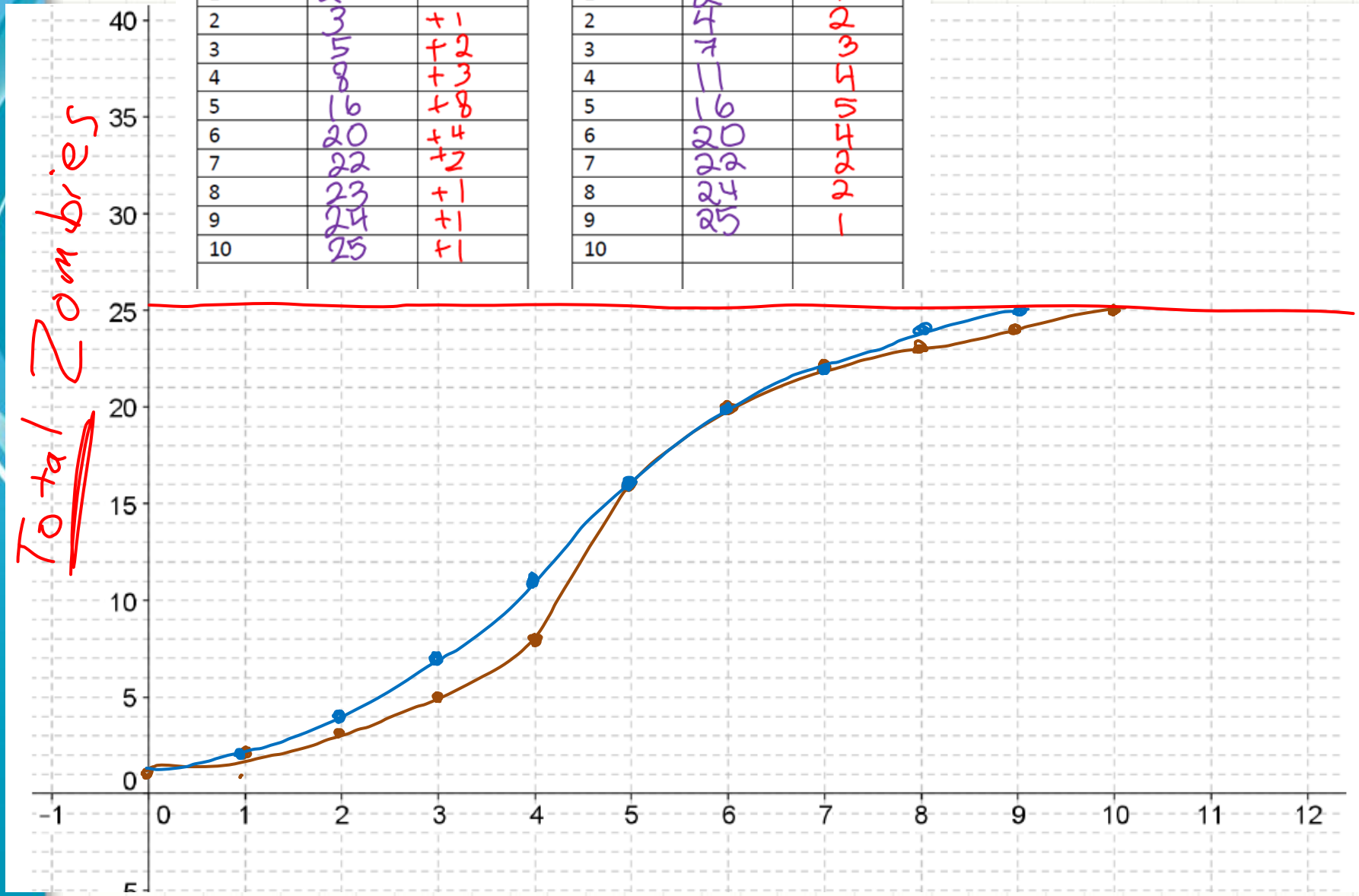
1. Classroom Zombie Data

Trial One

Round #	Zombies	new infections
0	1	
1	2	+1
2	3	+1
3	5	+2
4	8	+3
5	16	+8
6	20	+4
7	22	+2
8	23	+1
9	24	+1
10	25	+1

Trial Two

Round #	Zombies	new
0	1	
1	2	1
2	4	2
3	7	3
4	11	4
5	16	5
6	20	4
7	22	2
8	24	2
9	25	1
10		



2. Why did the rate of infections slow down?

3. Bacteria Data

seconds	bacteria	
0		
1		
2		
3		
4		
5		
6		

4. How does this growth compare with the zombie growth? Why is it different?

5. **Summarize** the difference between the two types of growth:

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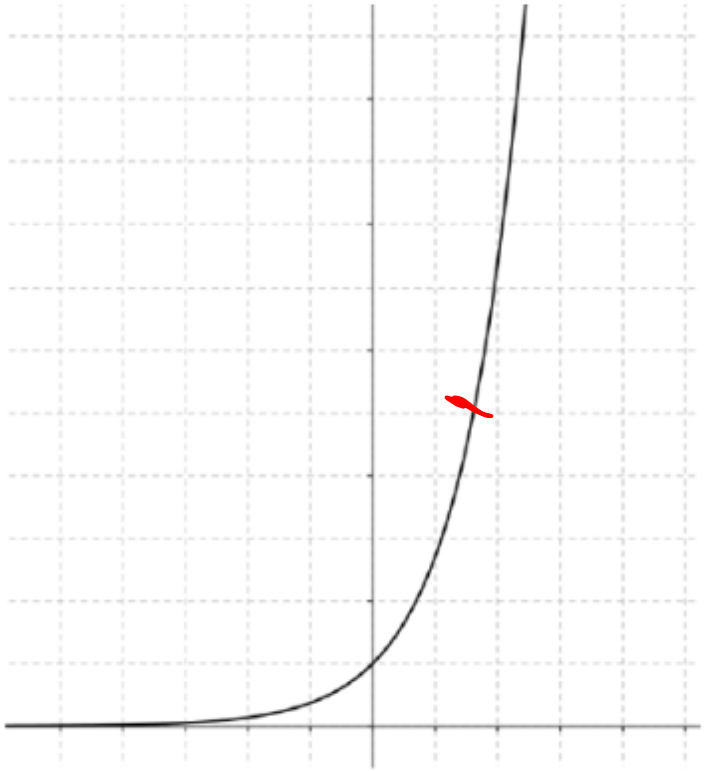
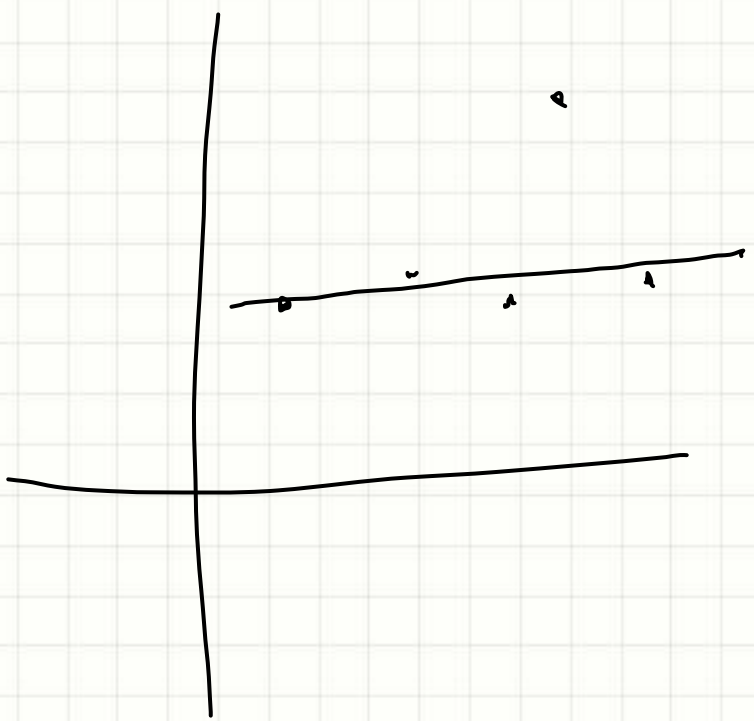
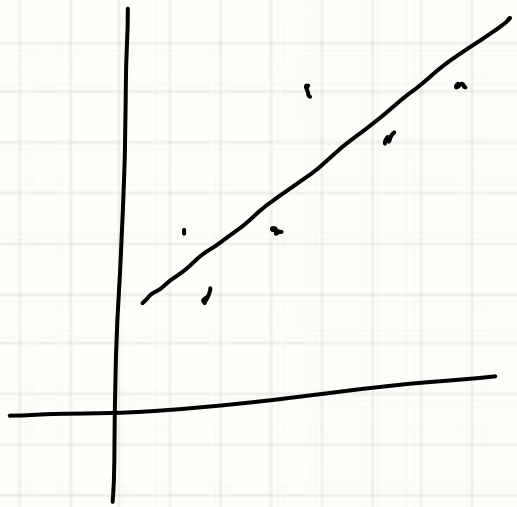






0

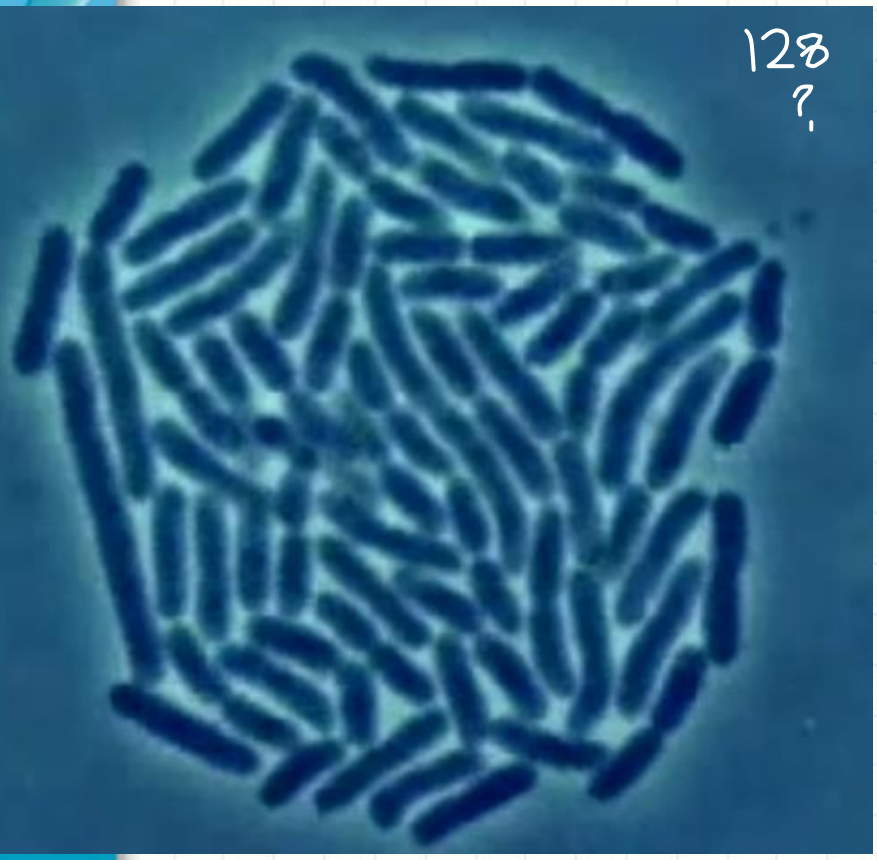
1

2

3

4

5



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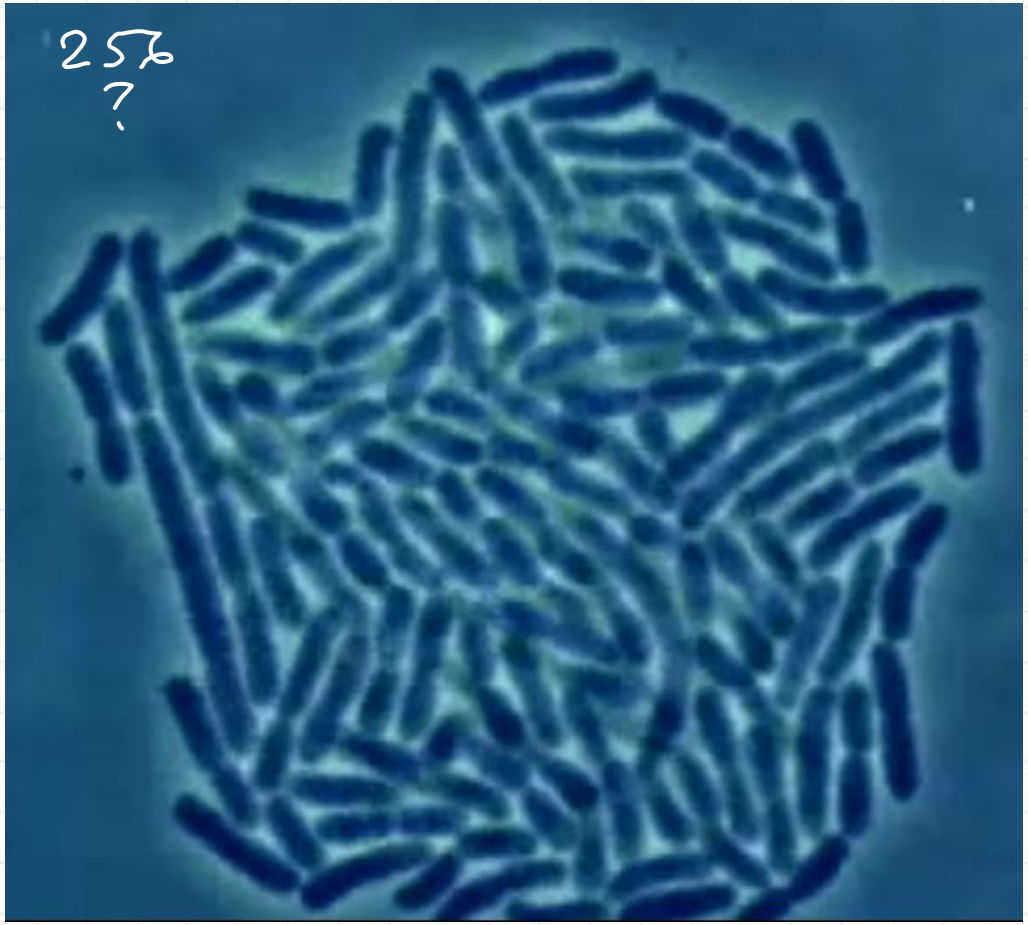
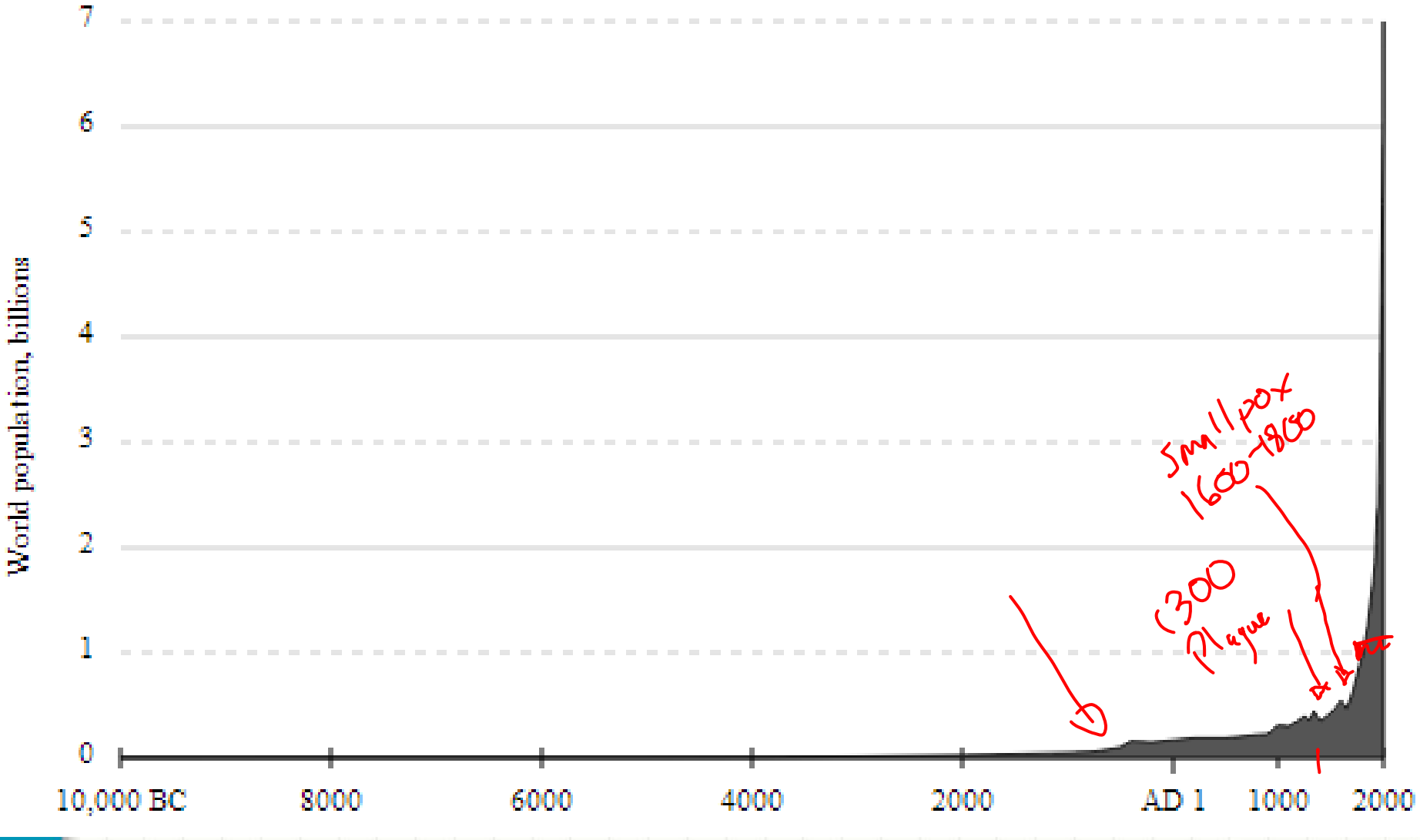
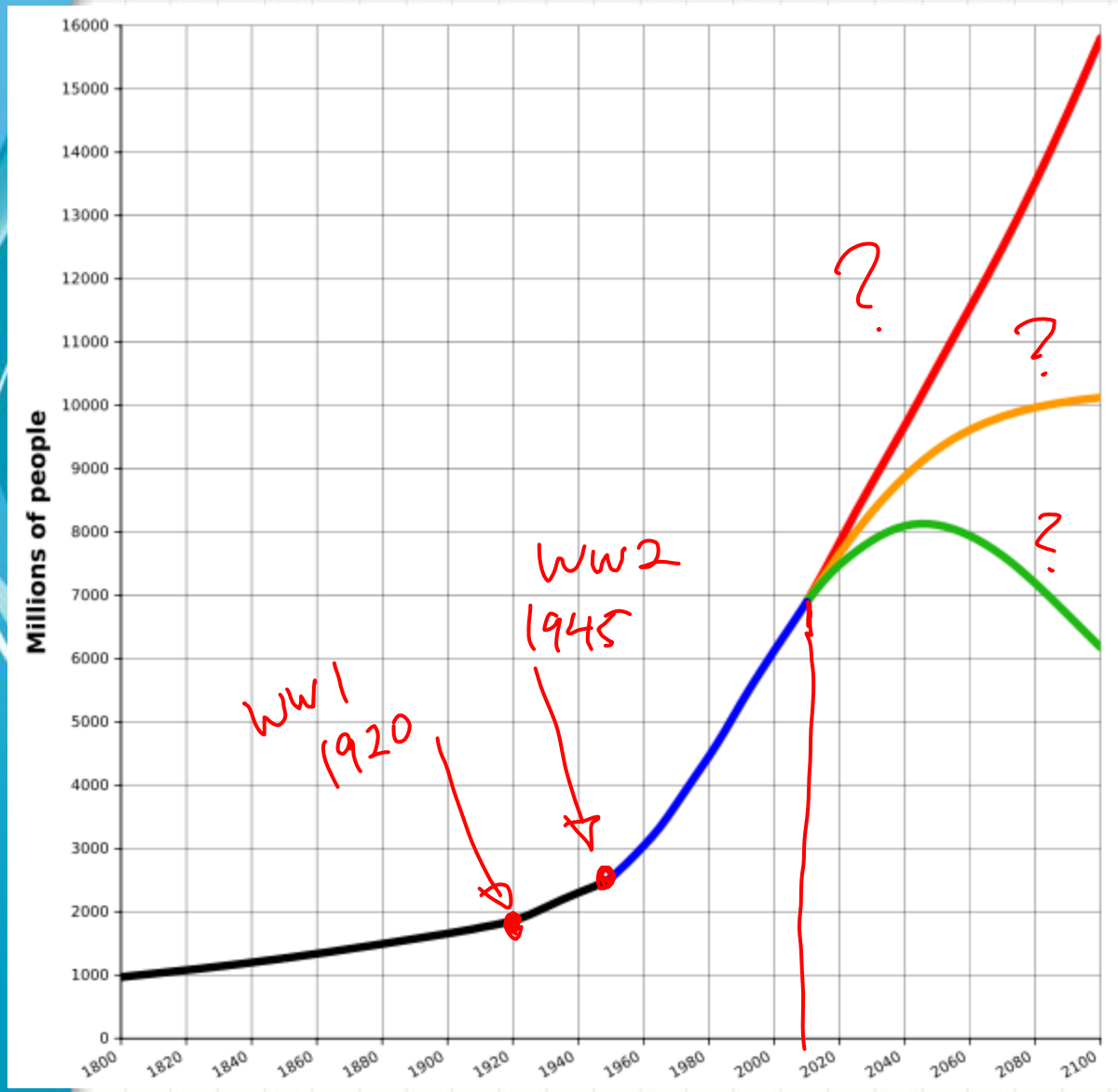


Human Population past 12,000 years





Population last 200 years, with predictions