

HAT  
Geometric Sequences

2/28/17

Warm Up: Find the value of  $\sum_{n=1}^{12} (5 + 7(n-1))$

$$5 + 12 + 19 + \dots + 82$$

12 terms

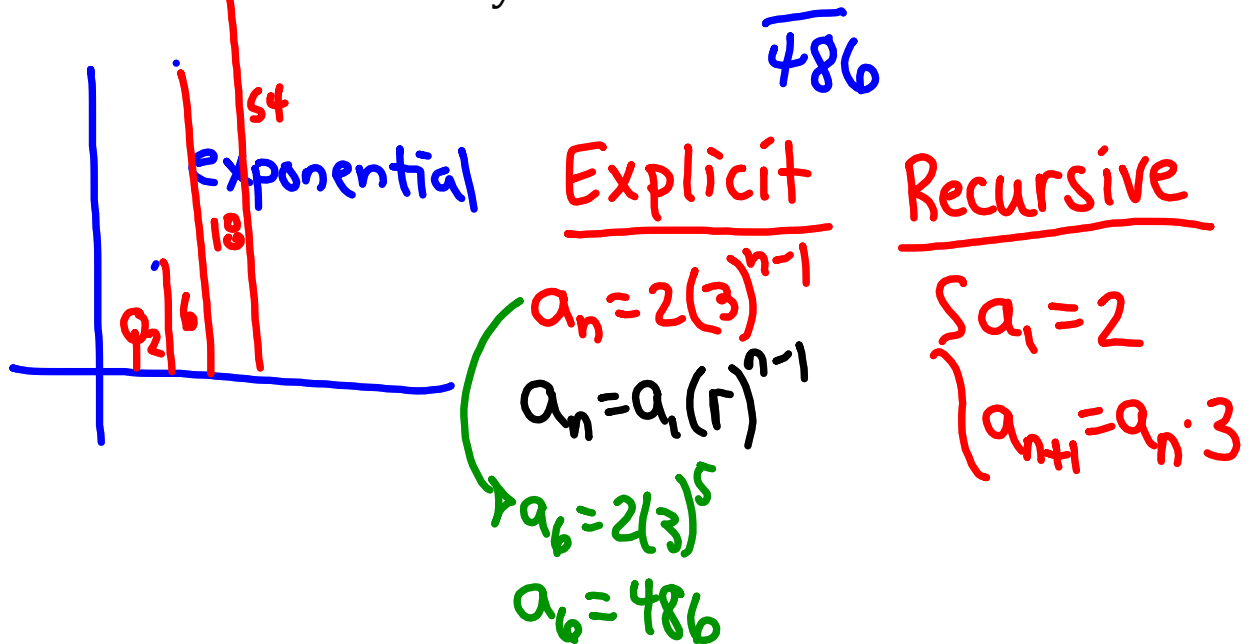
$$S_{12} = \frac{12(5+82)}{2}$$

$$S_{12} = 6(87)$$

$$S_{12} = 522$$

Ex#1: Given the sequence 2, 6, 18, 54, ..., 162, 486

- Classify this pattern as arithmetic geometric, or neither.
- Graph.
- Find an equation for this pattern.
- Use two different ways to find the 6th term.



Ex#2: Given the geometric sequence

$$4, \boxed{6}, \boxed{+9}, \textcircled{-13.5}, \dots \quad \text{4th term}$$

- find the missing terms (geometric means)
- write an equation for this sequence
- find the 7th term

$$a_n = 4 \left(-\frac{3}{2}\right)^{n-1} \quad a_n = a_1 (r)^{n-1}$$

$$a_7 = 4 \left(-\frac{3}{2}\right)^6$$

$$a_7 = \frac{729}{16}$$

$$-\frac{27}{2} = 4(r)^3$$

$$\sqrt[3]{-\frac{27}{8}} = \sqrt[3]{r^3}$$

$$-\frac{3}{2} = r$$