

2022 High School Algebra I Chapter 6 Exponential Functions and Sequences

Lesson 006 | Algebra I | Exponential functions and models • Geometric sequences and series

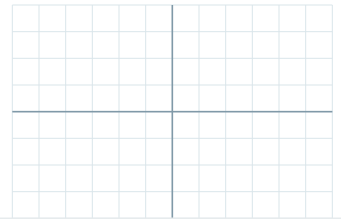
<https://www.youtube.com/watch?v=Ooc-vyq5ZQc>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Graph $f(x) = 4^{(x - (-7))} + 8$. Give its asymptote, domain, range, and two points.

**02**

A geometric sequence starts at 14 with ratio 6. Find term 6 and the sum through that term.

03

A population follows $P(t) = 500 \cdot 7^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

2022 High School Algebra I Chapter 6 Exponential Functions and Sequences

Lesson 006 | Algebra I | Exponential functions and models • Geometric sequences and series

<https://www.youtube.com/watch?v=Ooc-vyq5ZQc>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

04

Find the sum of the infinite geometric series with first term 78 and ratio $\frac{1}{6}$.

05

A population follows $P(t) = 500 \cdot 4^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

06

A geometric sequence starts at 7 with ratio 4. Find term 5 and the sum through that term.

2022 High School Algebra I Chapter 6 Exponential Functions and Sequences

Lesson 006 | Algebra I | Exponential functions and models • Geometric sequences and series

<https://www.youtube.com/watch?v=Ooc-vyq5ZQc>

Original practice aligned to the saved video title.

01

Graph $f(x) = 4^{(x - (-7))} + 8$. Give its asymptote, domain, range, and two points.

Shift $y=4^x$ horizontally by -7 and up 8. Asymptote $y=8$; domain all real x ; range $(8, \infty)$. Points $(-7, 9)$ and $(-6, 12)$.

02

A geometric sequence starts at 14 with ratio 6. Find term 6 and the sum through that term.

$a_m = 14 \cdot 6^{(m-1)}$, so $a_6 = 108864$. $S_6 = 14(6^6 - 1)/(6 - 1) = 130634$.

03

A population follows $P(t) = 500 \cdot 7^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

$P(0) = 500$; $P(2) = 24500$. Each increase of one in t multiplies the population by 7.

2022 High School Algebra I Chapter 6 Exponential Functions and Sequences

Lesson 006 | Algebra I | Exponential functions and models • Geometric sequences and series

<https://www.youtube.com/watch?v=Ooc-vyq5ZQc>

Original practice aligned to the saved video title.

04

Find the sum of the infinite geometric series with first term 78 and ratio $1/6$.

$|r| = 1/6 < 1$, so $S = a_1/(1-r) = 78/(1-1/6) = 468/5$.

05

A population follows $P(t) = 500 \cdot 4^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

$P(0) = 500$; $P(2) = 8000$. Each increase of one in t multiplies the population by 4.

06

A geometric sequence starts at 7 with ratio 4. Find term 5 and the sum through that term.

$a_m = 7 \cdot 4^{(m-1)}$, so $a_5 = 1792$. $S_5 = 7(4^5 - 1)/(4 - 1) = 2387$.