

Calculus Section 1 5 Exponential Models

Lesson 256 | Calculus AB | Exponential functions and models

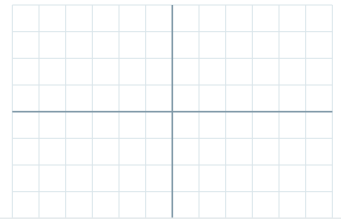
<https://www.youtube.com/watch?v=LgwuwP-bMGo>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Graph $f(x) = 3^{(x - 8)} + 13$. Give its asymptote, domain, range, and two points.

**02**

A population follows $P(t) = 700 \cdot 4^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

03

A population follows $P(t) = 400 \cdot 5^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

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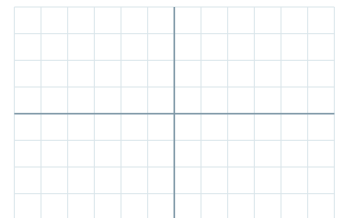
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Name: _____ Date: _____ Show your reasoning.

04

Graph $f(x) = 5^{(x - (-3))} + 7$. Give its asymptote, domain, range, and two points.

**05**

A population follows $P(t) = 300 \cdot 3^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

06

A population follows $P(t) = 1000 \cdot 7^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

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01

Graph $f(x) = 3^{(x - 8)} + 13$. Give its asymptote, domain, range, and two points.

Shift $y=3^x$ horizontally by 8 and up 13. Asymptote $y=13$; domain all real x ; range $(13, \infty)$. Points $(8, 14)$ and $(9, 16)$.

02

A population follows $P(t) = 700 \cdot 4^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

$P(0) = 700$; $P(2) = 11200$. Each increase of one in t multiplies the population by 4.

03

A population follows $P(t) = 400 \cdot 5^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

$P(0) = 400$; $P(2) = 10000$. Each increase of one in t multiplies the population by 5.

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04

Graph $f(x) = 5^{(x - (-3))} + 7$. Give its asymptote, domain, range, and two points.

Shift $y=5^x$ horizontally by -3 and up 7. Asymptote $y=7$; domain all real x ; range $(7, \infty)$. Points $(-3, 8)$ and $(-2, 12)$.

05

A population follows $P(t) = 300 \cdot 3^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

$P(0) = 300$; $P(2) = 2700$. Each increase of one in t multiplies the population by 3.

06

A population follows $P(t) = 1000 \cdot 7^t$. Find $P(0)$, $P(2)$, and the multiplication factor per time unit.

$P(0) = 1000$; $P(2) = 49000$. Each increase of one in t multiplies the population by 7.