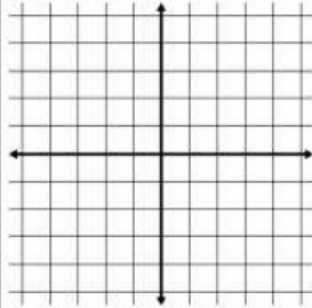


Sketch a graph of the following functions

$$y = 2 \cdot 0.4^x$$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

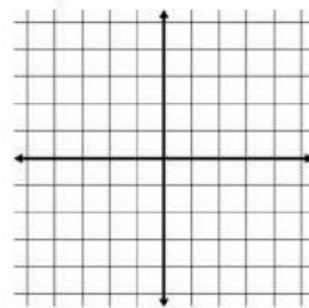
4) Find any extrema.

5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

$$y = 3e^{-x}$$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

4) Find any extrema.

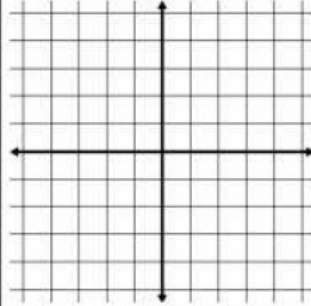
5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

Sketch a graph of the following functions

$$y = \frac{4}{1 + 2e^{-x}}$$



1) Determine the minimum and Maximum capacity (Horizontal Asy)

2) Determine the y-intercept

3) Determine the domain and range

4) Intervals of Increase or Decrease

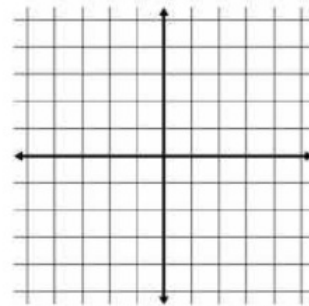
5) Determine the end behavior

6) Find any asymptotes

7) Determine Half the max capacity

8) Intervals of Concavity

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1) Determine the minimum and Maximum capacity (Horizontal Asy)

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$$y = a \cdot b^x$$

San Jose, CA
 (0, 898759)
 (7, 939899)

$$y = 898759(1.006)^x$$

Using the data in the table below and assuming the growth is exponential, answer the following questions?

City	2000 Population	2007 Population
Austin, TX	468,022 675370	656,562 755933
San Jose, CA	898,759	939,899

$t = 0$

$t = 7$

$$y = 898759 b^x$$

$$\frac{939899}{898759} = \frac{898759 b^7}{898759}$$

$$1.045 = b^7$$

$$\sqrt[7]{1.045} = b$$

Austin, TX

$$y = 675370(1.016)^x$$

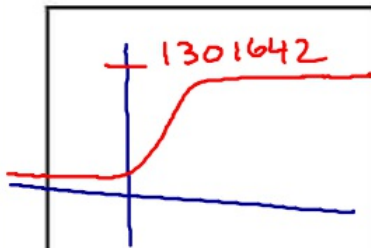
Between 2

a) When will the population of San Jose, California, surpass 1 million persons?

Between $t = 16$ and $t = 17$
 2016-2017

b) In what year will the population of Austin, TX and San Jose, CA be the same?

Between 29-30
 2029-2030



Based on recent Census Data, a logistic model for the population of Dallas, TX, t years after 1900, is as follows:

$$y = \frac{1301642}{1 + 21.602e^{-0.05054t}}$$

1301642 → Max Capacity

a) What was the population of Dallas, TX in the year 2000?

114396.691

Actual 1.19 million

b) According to the model, what is Dallas' maximum sustainable population?

1301642

c) According to this model, when was the population 1 million.

Between 1984-1985

Bacteria Growth

The number of bacteria after t hours is given by

$$y = 150 e^{0.52t}$$

- a) What was the initial amount of bacteria present?

- b) How many bacteria are present after 4 hours?

- c) How many hours will it take until there are 400 bacteria?

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