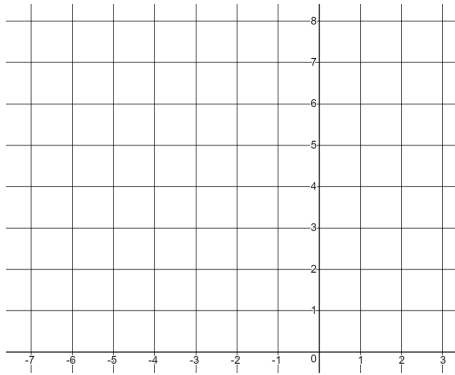


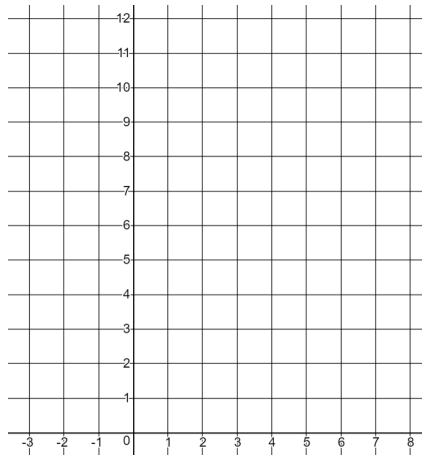
Practice

Graph the equations. Then, identify the y-intercept, asymptote, domain, and range for each.

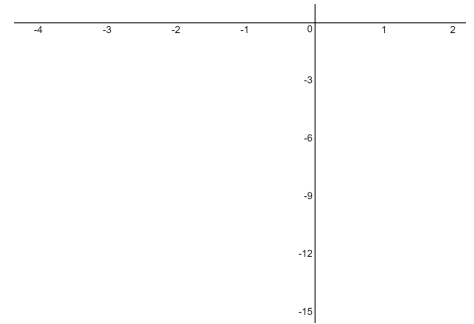
$$y = 2(4)^x$$



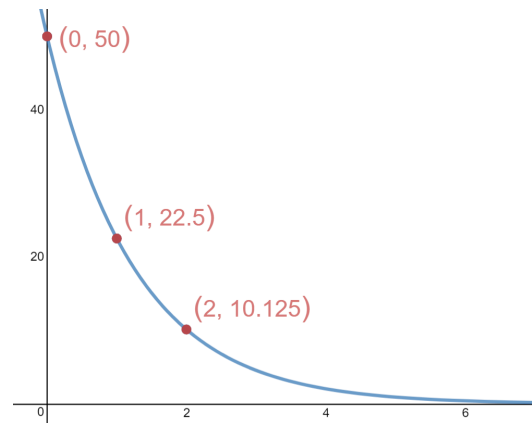
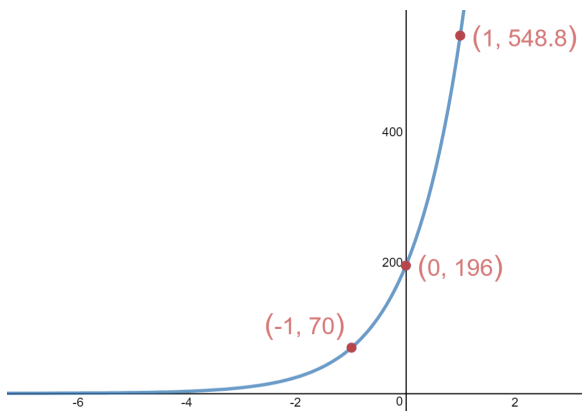
$$y = 12(0.25)^x$$



$$y = -3(5)^x$$



Write an equation to describe each graph.



A certain type of lily plant is growing in a pond in such a way that the number of plants is growing exponentially. The number of plants, N , in the pond at time t is modeled by the function $N(t) = ab^t$, where a and b are constants and t is measured in months. The table shows two values of the function.

t	$N(t)$
0	150
1	450

Which equation can be used to find the number of plants in the pond at time t ?

A $N(t) = 150(1)^t$

B $N(t) = 450(1)^t$

C $N(t) = 150(3)^t$

D $N(t) = 450(3)^t$

At the beginning of an experiment, the number of bacteria in a colony was counted at time $t = 0$. The number of bacteria in the colony t minutes after the initial count is modeled by the function $b(t) = 4(2)^t$. Which value and unit represent the average rate of change in the number of bacteria for the first 5 minutes of the experiment?

Select **all** that apply.

- A 24.0
- B 24.8
- C 25.4
- D 25.6
- E bacteria
- F minutes
- G bacteria per minute
- H minutes per bacteria

The population of a city in 2005 was 36,000. By 2010, the city's population had grown to 43,800 people.

Part A

Which expression is an appropriate exponential model for the population of the city? Let t represent the time, in years, since 2005.

- A $36,000(1.04)^t$
- B $36,000(1.04)^{5t}$
- C $36,000(1.217)^t$
- D $36,000(1.217)^{5t}$

Part B

Assuming that the population of the city has grown exponentially since 2005 and continues to grow at the same rate, what will be the population in 2015? Give your answer to the nearest whole number.

Part C

Another town's population could be modeled by the function $P(t) = 27,400(1.66)^{\frac{t}{10}}$, where P represents the population and t represents the time, in years, since 2005. Based on the model, by approximately what percent does the population of this town increase each year?

- A 1
- B 3
- C 5
- D 7