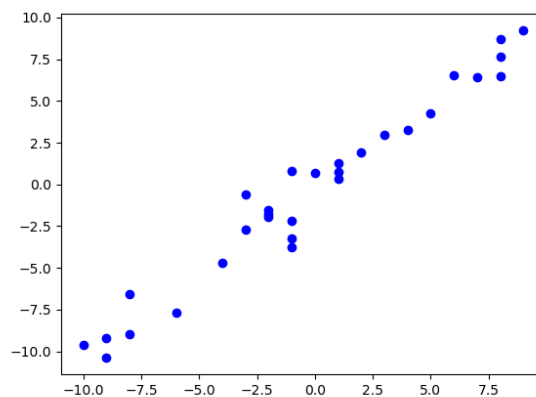


1. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 8 many cases reported, but the number of confirmed cases has doubled every 2 days. How long will it be until there are at least 10000 confirmed cases?

- A. About 6 days
 - B. About 7 days
 - C. About 15 days
 - D. About 21 days
 - E. There is not enough information to solve the problem.
-

2. Determine the appropriate model for the graph of points below.



- A. Non-linear Power model
 - B. Logarithmic model
 - C. Linear model
 - D. Exponential model
 - E. None of the above
-

3. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$.

Pringles wants to add 32 percent more chips to their cylinder cans and minimize the design change of their cans. They've decided that the best way to minimize the design change is to increase the radius and height by the same percentage. What should this increase be?

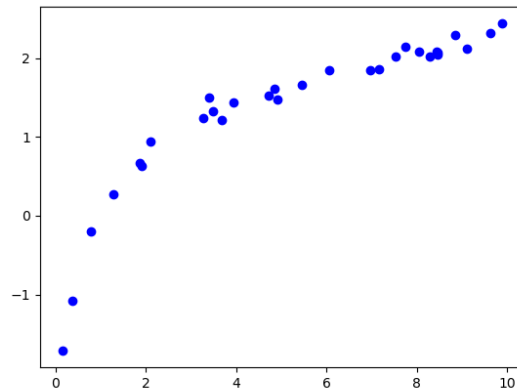
- A. About 3 percent
 - B. About 16 percent
 - C. About 15 percent
 - D. About 10 percent
 - E. None of the above
-

4. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 4 many cases reported, but the number of confirmed cases has quadrupled every 3 days. How long will it be until there are at least 1000000 confirmed cases?

- A. About 27 days
 - B. About 15 days
 - C. About 18 days
 - D. About 38 days
 - E. There is not enough information to solve the problem.
-

5. Determine the appropriate model for the graph of points below.



- A. Linear model
- B. Non-linear Power model
- C. Logarithmic model
- D. Exponential model
- E. None of the above

-
6. Using the scenario below, model the population of bacteria α in terms of the number of minutes, t that pass. Then, choose the correct approximate (*rounded to the nearest minute*) replication rate of bacteria- α .

A newly discovered bacteria, α , is being examined in a lab. The lab started with a petri dish of 4 bacteria- α . After 1 hours, the petri dish has 13 bacteria- α . Based on similar bacteria, the lab believes bacteria- α doubles after some undetermined number of minutes.

- A. About 33 minutes
- B. About 283 minutes
- C. About 47 minutes
- D. About 199 minutes
- E. None of the above

7. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$.

Pringles wants to add 28 percent more chips to their cylinder cans and minimize the design change of their cans. They've decided that the best way to minimize the design change is to increase the radius and height by the same percentage. What should this increase be?

- A. About 14 percent
- B. About 13 percent
- C. About 9 percent
- D. About 3 percent
- E. None of the above

-
8. Using the scenario below, model the population of bacteria α in terms of the number of minutes, t that pass. Then, choose the correct approximate (*rounded to the nearest minute*) replication rate of bacteria- α .

A newly discovered bacteria, α , is being examined in a lab. The lab started with a petri dish of 4 bacteria- α . After 2 hours, the petri dish has 69 bacteria- α . Based on similar bacteria, the lab believes bacteria- α doubles after some undetermined number of minutes.

- A. About 277 minutes
- B. About 422 minutes
- C. About 46 minutes
- D. About 70 minutes
- E. None of the above

-
9. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 26 liter 29 percent solution of chemical χ using two different solution percentages of chemical χ . When she went to write her lab report, she realized she forgot to write

the amount of each solution she used! If she remembers she used 5 percent and 34 percent solutions, what was the amount she used of the 5 percent solution?

- A. 13.00
- B. 4.48
- C. 21.52
- D. 10.10
- E. There is not enough information to solve the problem.

10. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 27 liter 24 percent solution of chemical χ using two different solution percentages of chemical χ . When she went to write her lab report, she realized she forgot to write the amount of each solution she used! If she remembers she used 20 percent and 37 percent solutions, what was the amount she used of the 20 percent solution?

- A. 13.50
 - B. 6.35
 - C. 7.74
 - D. 20.65
 - E. There is not enough information to solve the problem.
-