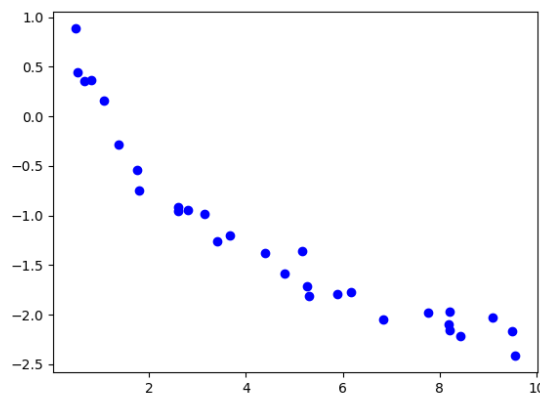


1. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 3 many cases reported, but the number of confirmed cases has quadrupled every 5 days. How long will it be until there are at least 1000000 confirmed cases?

- A. About 64 days
 - B. About 46 days
 - C. About 28 days
 - D. About 33 days
 - E. There is not enough information to solve the problem.
-

2. 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
-

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

Pringles wants to add 34 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?

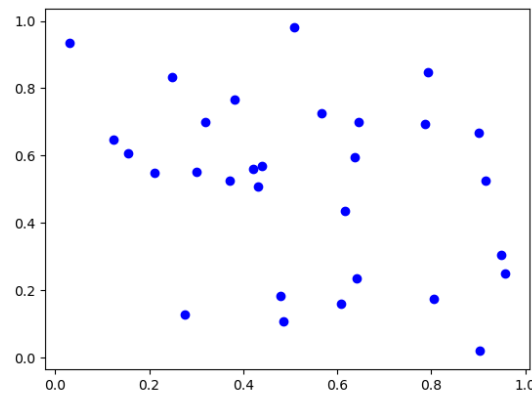
- A. About 17 percent
 - B. About 16 percent
 - C. About 10 percent
 - D. About 3 percent
 - E. None of the above
-

4. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 6 many cases reported, but the number of confirmed cases has quadrupled every 1 days. How long will it be until there are at least 10000 confirmed cases?

- A. About 8 days
 - B. About 3 days
 - C. About 6 days
 - D. About 4 days
 - E. There is not enough information to solve the problem.
-

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



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

-
6. For the information provided below, construct a linear model that describes the total distance of the path, D , in terms of the time spent on a particular path *if we know that all parts of the path are equal length*.

A bicyclist is training for a race on a hilly path. Their bike keeps track of their speed at any time, but not the distance traveled. Their speed traveling up a hill is 7 mph, 11 mph when traveling down a hill, and 8 mph when traveling along a flat portion.

- A. $616t$
- B. $0.359t$
- C. $26t$
- D. The model can be found with the information provided, but isn't options 1-3
- E. The model cannot be found with the information provided.

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

Pringles wants to add 48 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 24 percent
- B. About 4 percent
- C. About 22 percent
- D. About 14 percent
- E. None of the above

-
8. For the scenario below, find the variation constant k of the model (if possible).

In an alternative galaxy, the cube of the time, T (Earth years), required for a planet to orbit Sun χ increases as the cube of the distance, d (AUs), that the planet is from Sun χ increases. For example, when Ea's average distance from Sun χ is 3, it takes 76 Earth days to complete an orbit.

- A. $k = 4.028$
- B. $k = 11852352.000$
- C. $k = 16258.370$
- D. $k = 2.937$
- E. Unable to compute the constant based on the information given.

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

In CHM2045L, Brittany created a 27 liter 6 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 26 percent solutions, what was the amount she used of the 26 percent solution?

- A. 13.50
- B. 1.29
- C. 21.93
- D. 25.71
- E. There is not enough information to solve the problem.

10. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 28 liter 18 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 18 percent and 40 percent solutions, what was the amount she used of the 18 percent solution?

- A. 14.00
 - B. 0.00
 - C. 28.00
 - D. 2.48
 - E. There is not enough information to solve the problem.
-