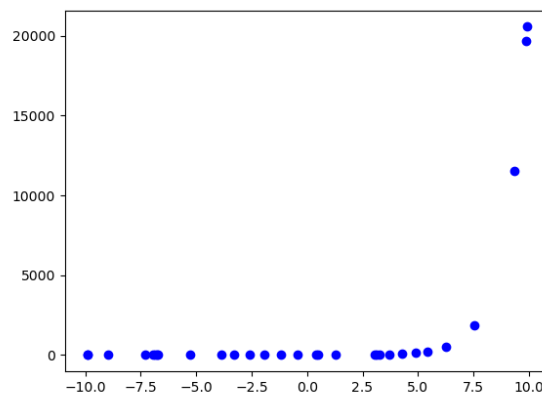


1. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$ to find the coefficient for the model of the new volume $V_{extnew} = kr^2 h$.

Pepsi wants to increase the volume of soda in their cans. They've decided to increase the radius by 14 percent and decrease the height by 18 percent. They want to model the new volume based on the radius and height of the original cans.

- A. $k = 0.00353$
- B. $k = 0.01108$
- C. $k = 1.06567$
- D. $k = 3.34791$
- E. None of the above.

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



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

3. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 23 liter 31 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 16 percent and 39 percent solutions, what was the amount she used of the 16 percent solution?

- A. 15.00
 - B. 8.00
 - C. 8.02
 - D. 11.50
 - E. There is not enough information to solve the problem.
-

4. 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 doubled every 4 days. How long will it be until there are at least 10000 confirmed cases?

- A. About 18 days
 - B. About 47 days
 - C. About 33 days
 - D. About 21 days
 - E. There is not enough information to solve the problem.
-

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

Pringles wants to add 36 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 18 percent
- C. About 17 percent
- D. About 11 percent
- E. None of the above

6. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 23 liter 7 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. 11.50
- B. 18.04
- C. 1.59
- D. 21.41
- E. There is not enough information to solve the problem.

7. 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 15 days

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

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

Pringles wants to add 46 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?

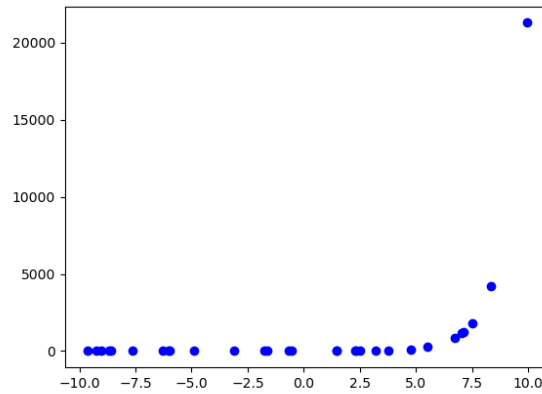
- A. About 13 percent
 - B. About 23 percent
 - C. About 21 percent
 - D. About 4 percent
 - E. None of the above
-

9. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$ to find the coefficient for the model of the new volume $V_{extnew} = k r^2 h$.

Pepsi wants to increase the volume of soda in their cans. They've decided to increase the radius by 20 percent and increase the height by 14 percent. They want to model the new volume based on the radius and height of the original cans.

- A. $k = 0.00560$
- B. $k = 5.15724$
- C. $k = 1.64160$
- D. $k = 0.01759$
- E. None of the above.

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



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