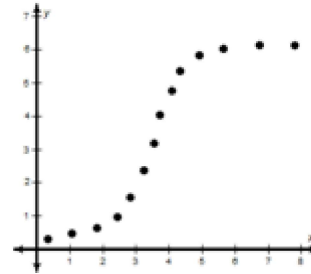


Unit 04-07 - Non-Linear Regression Models**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

1. **Other Regression Models**

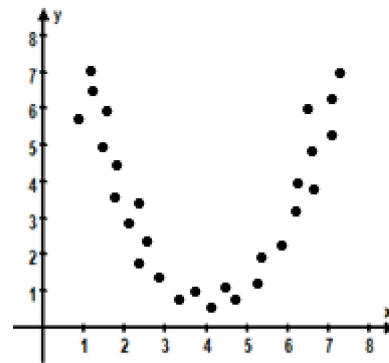
Which model would best represent the scatter plot shown at the right?



- a. Cubic
b. Sinusoidal
c. Exponential
d. Logistics Curve

2. **Other Regression Models**

Which model would best represent the scatter plot shown at the right?



- a. Cubic
b. Quadratic
c. Exponential
d. Logistics Curve

3. An ant colony is growing and doubles in population every 2 months. On the initial day of study the colony had 48 ants. The table shows the ant population of the colony at the end of the first few months.



Time (months)	0	1	2	3	4
Ant Population	48	72	108	162	243

Which type of model would be the best model to describe the relationship of the ant colony population over time?

- a. Linear Model
b. Quadratic Model
c. Exponential Model

4. **Other Regression Models**

A person drinks a Red Rhino energy drink that has approximately 100 mg of caffeine in it. A doctor measures the approximate amount of caffeine in the person's body x hours after drinking it and recorded the following results below.

Time (hours)	0.5	1	1.5	2
Caffeine (mg)	93	87	81	76



Using your calculator determine an **exponential regression model** that is most appropriate where x represents hours after drinking the energy drink and y represents the number of milligrams of caffeine in the body.

a. $y = 99.50 \cdot 0.8734^x$

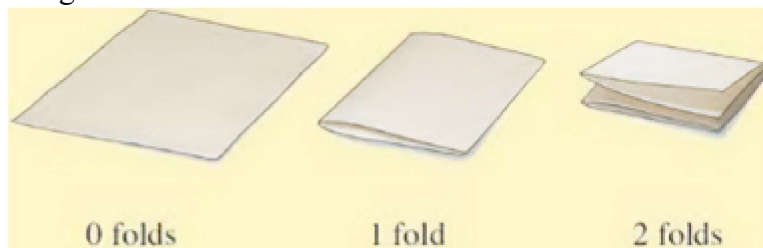
c. $y = 98.5 - 11.4x$

b. $y = 98.50 \cdot 0.1140^x$

d. $y = 99.956 \cdot 0.99978^x$

5. **Other Regression Models**

A piece of paper is repeatedly folded in half and the total thickness of the folded paper is measured using a micrometer.



Number of Folds	0	1	2	3
Thickness (mm)	0.07 mm	0.15 mm	0.32 mm	0.70 mm

Using your calculator determine an **exponential regression model** and use your model to predict how thick the folded paper would be on the 6th fold.

a. ≈ 1.421 mm

c. ≈ 5.828 mm

b. ≈ 3.221 mm

d. ≈ 6.933 mm