

### Answer on Question #56783 – Math – Calculus

The function

$$N(t) = 1 + 299e^{-0.36t}$$

describes the spread of a rumor among a group of people in an enclosed space.

$N$  represents the number of people who have heard the rumor, and  $t$  is measured in minutes since the rumor was started.

Which of the following statements are true?

Check all that apply.

- (1) Initially, only one person had heard the rumor.
- (2) It will take 30 minutes for 100 people to hear the rumor.
- (3) There are 300 people in the enclosed space.
- (4) The rate at which the rumor spreads changes over time.

#### Solution

- 1) false:  $N(0) = 1 + 299e^{-0.36 \cdot 0} = 300$ , hence 300 people had heard the rumor.
- 2) false:  $N(30) = 1 + 299e^{-0.36 \cdot 30} = 1.006$ .
- 3) true, because  $N(t)$  is not greater than 300.
- 4) false, if "1" were absent, then  $N(t) = 299e^{-0.36 \cdot t}$  would be equal-rate process.