Name:	Date:	IB Math A&A SL
Lesson 3.10 - Logarithmic & Exponential Mode	ls II	
1. <i>Turkey Cooking Times!</i> - A turkey is co turkey reaches 165°F. The starting temp an oven at 325°F. The internal temperate	erature of a turkey is measured at	40°F and then it is placed into
F(t)	$) = -285e^{kt} + 325$	
Where F(t) describes the internal temperature of notices that his turkey's internal temperature rea	<u> </u>	e in minutes. Mr. Braza
a. Determine the internal temperature of the	e turkey after 3 hours.	
b. Determine the time it takes for the turkey	y to be considered "fully cooked"	
c. Graph the function from $0 \le t \le 2500$ temperature of the turkey after a long, lo	•	What happens to the internal

2.	On a college campus of 7500 students, one student returns from vacation with a contagious and long-
	lasting virus. The spread of the virus is modeled by:

$$V(t) = \frac{7500}{1 + 7499e^{-0.9t}}, \ t \ge 0$$

Where V(t) is the number of students afflicted by the virus after t days.

- a. How many students will be infected after 4 days?
- b. The college will cancel classes when 30% or more of the students are infected. After how many days will the college cancel classes?
- c. Graph the function for  $0 \le t \le 30$ . If classes were not cancelled, explain the end behavior of the spread of the virus on the college campus.
- 3. The management at plastics factory has found that the maximum number of units a worker can produce in a day is 30. The learning curve for the number N of units produced per day after a new employee has worked t days is modeled by  $N = 30(1 e^{kt})$ . After being on the job 20 days, a worker can produce 19 units in a day,
- a. Find the learning curve for this employee (find the value of 'k').

b. How many days should pass before this employee is producing 25 units a day?