

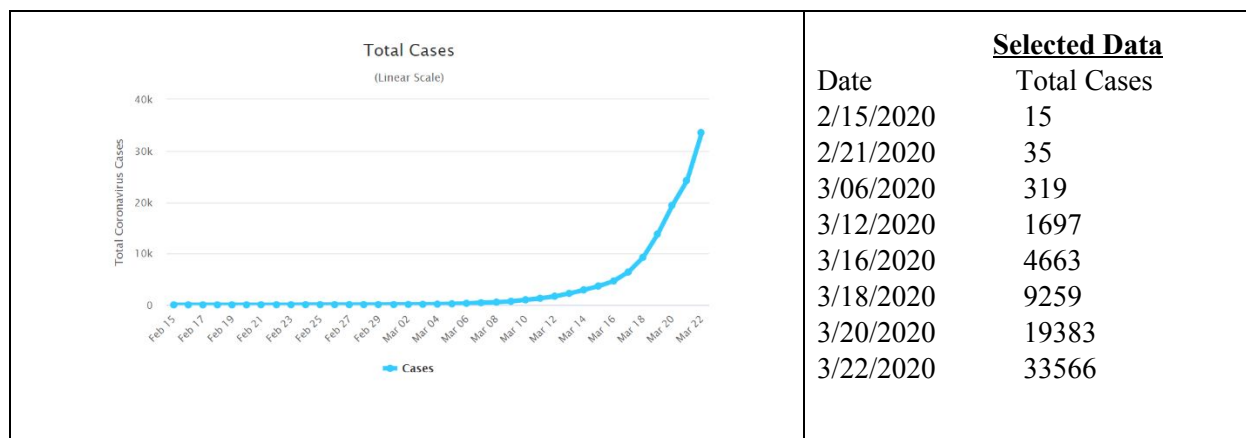
3) A certain rumor spreads through a community at the rate of $\frac{dy}{dt} = 2y(1-y)$, where y is the proportion of the population that has heard the rumor at time t . This is a logistic differential equation.

a) If at time $t = 0$ ten percent of the people have heard the rumor, find y as a function of t .

c) Find $\lim_{t \rightarrow \infty} y(t)$, and explain its meaning in the context of the problem.

1) The function below shows the number of people in the United States who've tested positive with Covid-19,

$C(t) = Ab^t + D$ is a function of time, where t is measured in days after February 15.



a) Find D : Identify the horizontal asymptote.

b) Use the data points to find A , and b .

c) Use a calculator to evaluate the function that you found for $C(t)$, in part b, to fill in the table below.

t in days after Feb 15	7	14	21	28
$C(t)$ Total Cases				
Date:	2/22/20	2/29/20	3/7/20	3/14/20

d) Write an exponential differential equation for your exponential model. What does your model say about the rate of expansion of the infected cases today? Did your model predict the number of total infected cases today accurately? Explain.