

Sept. 17 Worksheet

1. A highly contagious strain of the flu is spreading through a city. The number of new cases is observed to be increasing by 18% every 5 days. On January 10th, health officials reported 1,200 new cases.

Find the function that predicts the amount of new cases t days after January 10th.

Based on this trend, what is the estimated number of new cases on January 30th?

2. A cup of soup is left on a countertop to cool. The table below gives the temperatures, in degrees Fahrenheit, of the soup recorded over a 10-minute period.

time in minutes (x)	0	2	4	6	8	10
temperature in °F (y)	180.2	165.8	146.3	135.4	127.7	110.5

Write an exponential regression equation for the data. Round to the nearest thousandth.

3. What is the equation that approaches Euler's number e ? Graph in Desmos. What do you notice?

4. What can **e** be compared to?

5. Evaluate the following:

$$e^{.08}$$

$$e^{-.08}$$

$$e^{3.7}$$

$$e^{-3.7}$$

6. Assuming $A = 4$, use the values above to convert the exponential function from Ae^{rt} to Ab^x

7. A new social media app is gaining popularity. The number of new users is observed to be increasing by 25% every week. On May 1st, the app had 15,000 active users.

Find the function that predicts the number of active users, t days after May 1st.

Based on this trend, what is the estimated number of active users on June 15th?