Alg2 Classwork/Homework, due Thursday, February 15 ❤️

On a separate sheet of paper, answer each question, showing as much of your work as possible.

64. In 2000, there were about 300 million Internet users. That number is projected to grow to 1 billion in 2005.

a. Let t represent the time, in years, since 2000. Write a function of the form $y = ae^{ct}$ that models the expected growth in the population of Internet users.

b. In what year might there be 500 million Internet users?

c. In what year might there be 1.5 billion Internet users?

d. Solve your equation for t.

e. **Writing** Explain how you can use your equation from part (d) to verify your answers to parts (b) and (c).

65. **Physics** The function $T(t) = T_r + (T_i - T_r)e^{kt}$ models Newton's Law of Cooling. $T(t)$ is the temperature of a heated substance t minutes after it has been removed from a heat (or cooling) source. T_i is the substance's initial temperature, k is a constant for that substance, and T_r is room temperature.

a. The initial surface temperature of a beef roast is 236°F and room temperature is 72°F. If $k = -0.041$, how long will it take for this roast to cool to 100°F?

b. Write and graph an equation that you can use to check your answer to part (a). Use your graph to complete the table below.

Temperature (°F)	225	200	175	150	125	100	75
Minutes Later