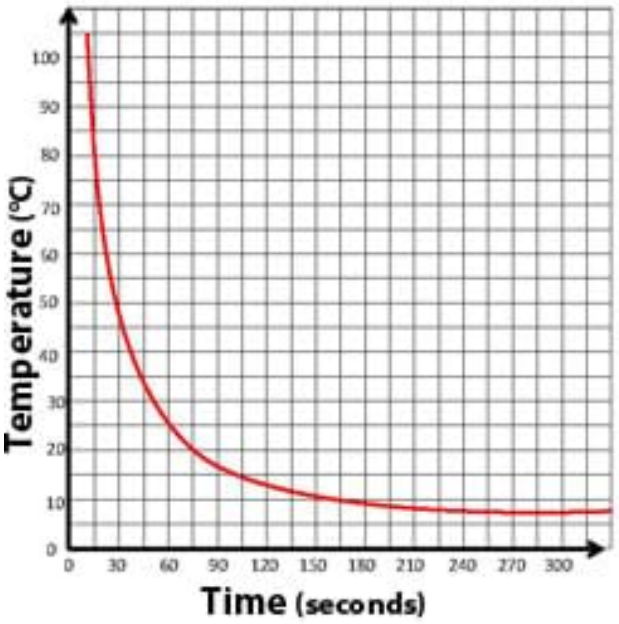
First Name _____ Last Name _____ Date ___ – ___ – ___ Period ____ Score ____

Learning Objectives.

- To categorize the end behaviors of the graph as approaching an infinity or a horizontal asymptote
- To distinguish the different pace toward infinity

Discussion.

1. The following graph shows the state of an object cooling over time:



   (a) What is the quantity represented by the x-axis?

   (b) What is the quantity represented by the y-axis?

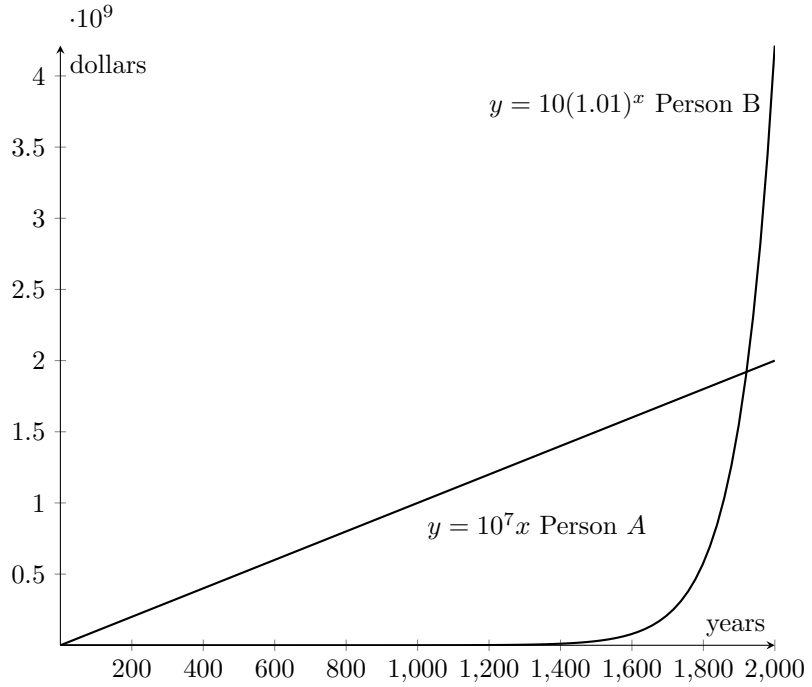
   (c) How do you describe the behaviors of the graph as x approaches positive infinity?

   (d) What can you infer about the room temperature in which this cooling process was taking place? And why?

2. Suppose person A has a $\$1,000,000$ annual income job, and person B has a bank account with 1% annual interest rate and she deposits \$10 in the account at the beginning. Based on these hypotheses only and ignoring any unpredictable factor. Do not turn to the flip side of this page.

   (a) According to your intuition, who do you think is wealthier in the long run? And why?

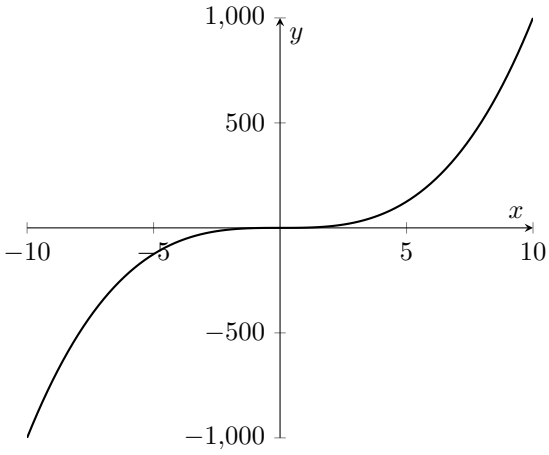
   (b) Now turn to the flip side of the page and examine the graph. Does the graph speak to your intuition? What can you conclude now?

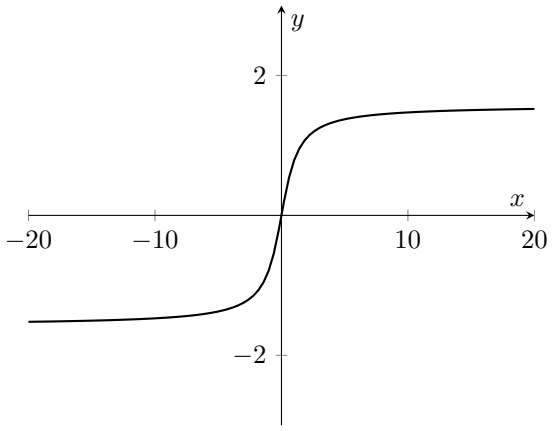


(Remark: If you are unfamiliar with the concept of "compound interest", be sure to Google it after class!)

(c) What life lesson can you learn from this phenomenon?

Exit Tickets. Describe the end behaviors of the graphs below.





Model Statement: As x approaches $\infty / -\infty$, y approaches _____.