

**Writing Assignment 1: The Saga of Sasha and Malia**

(ripped from the Headlines) 30 pts

Name \_\_\_\_\_

Section: 9:00 11:00

Bernie made off with a large sum of cash. Being very generous, he decided to start a college fund for under-privilege children. The first two recipients of his generosity were Sasha and Malia. He initially provided each of them with \$500. He then provided Sasha with \$50 every year and he opened an account for Malia that earned 5% interest every year. (Only Bernie could guarantee this rate of return!!!) Report any approximate answers to the nearest \$0.01 or 0.1 year.

- (4) **1.** How much did each of the girls have at the end of the following amount of time?  
Note: Each girl had \$500 at the end of year 0.
- a. one year Sasha: \$ \_\_\_\_\_ Malia: \$ \_\_\_\_\_  
b. 6 years Sasha: \$ \_\_\_\_\_ Malia: \$ \_\_\_\_\_
- (4) **2.** In how many years will each girl have approximately the following amount of money?
- a. \$1000 Sasha: \_\_\_\_\_ years Malia: \_\_\_\_\_ years  
b. \$15000 Sasha: \_\_\_\_\_ years Malia: \_\_\_\_\_ years
- (2) **3.** If you haven't already, it is time to model Sasha's situation with a *linear equation* and Malia's with an *exponential equation*. Your equations should begin with "y ="  
Sasha: \_\_\_\_\_ Malia: \_\_\_\_\_

A graphing calculator is necessary in working the following. Combining your equations from **3.**,  $(y_1 - y_2)$  would be helpful but not necessary in working **4. - 7.**

- (2) **4.** In how many years will the girls have the same amount of money? \_\_\_\_\_ years  
What is this amount? \$ \_\_\_\_\_
- (3) **5.** When will Malia have \$500 more than Sasha? \_\_\_\_\_ years  
How much would each have? Sasha: \$ \_\_\_\_\_ Malia: \$ \_\_\_\_\_
- (3) **6.** When will Malia have twice as much money as Sasha? \_\_\_\_\_ years  
How much would each have? Sasha: \$ \_\_\_\_\_ Malia: \$ \_\_\_\_\_
- (3) **7.** When will Sasha have her "largest lead" over Malia? \_\_\_\_\_ years  
How much would each have? Sasha: \$ \_\_\_\_\_ Malia: \$ \_\_\_\_\_

At the end of 30 years, Sasha has \$2000. She decides to invest in a company called Dog Kennels, Inc. (nyse: BOX). Immediately the stock starts losing money at the rate of 37% per year.

- (2) **8.** Write an exponential equation modeling this situation. \_\_\_\_\_ years
- (1) **9.** Determine how much she has after 1 year. \$ \_\_\_\_\_
- (4) **10.** Determine how long it takes before her stock is worth
- a. \$1000? \_\_\_\_\_ years      c. \$250? \_\_\_\_\_ years  
b. \$500? \_\_\_\_\_ years      d. \$125? \_\_\_\_\_ years
- (2) **11.** There a pattern in your answers to **10.** What do you notice?