

## QUIZ 6 - MATH 111

Friday, October 28

YOUR NAME: \_\_\_\_\_

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Your parents are reviewing some savings account statements for the last 5 years, starting with their account statement for the beginning of 2007:

Year	2007	2008	2009	2010	2011
Balance	8000	8072	8144.65	8217.95	8291.91

- (a) Are the data in the table exponential? Explain.
- (b) What is the yearly growth rate for the data? What has their annual interest rate being?
- (c) What is the monthly growth rate?
- (d) Find a model giving their balance at the beginning of the  $t$ -th year since 2007 in terms of  $t$ .
- (e) Your parents have forgotten how much money they had in the account at the beginning of 2005, when they actually opened the account. Assuming a constant annual interest rate, can you figure this out for them?

2. Your grandma, who is banking at a different financial institution than your parents is reviewing her savings account statements for the last 5 years, starting with her account statement for the beginning of 2007:

Year	2007	2008	2009	2010	2011
Balance	58000	58580	59118.94	59769.25	60277.29

- (a) Are the data in the table exponential? Explain.
- (b) Plot the data. Are they close to exponential? Please, label your axes clearly in your graph.
- (c) Perform exponential regression to find an exponential model for your grandma's account balance as a function of the year  $t$  since the beginning of 2007.
- (d) Unlike your parents, your grandma actually opened her account at the beginning of 1982. Using your exponential model can you figure out how much money she deposited when opening her account?
- (e) Your grandma is worried that, unless her account grows to \$ 65,000, she will not be able to realize her long-time dream of visiting her native Dublin in Ireland. Can you help her find out by the beginning of which year she'll be able to schedule her European vacation?