NAME: MATH1313

# Quiz 4

February 28, 2019

**Instructions:** Do all the problems on **both sides** of this paper. Show all your work. Please show intermediate steps in the calculations you do.

| | |
|---|---|
| Simple Interest Formula | $A = P(1 + APR \times Y)$ |
| Compunded Interest Formula (compounding $n$ times per year) | $A = P\left(1 + \frac{APR}{n}\right)^{nY}$ |
| Continuously Compunded Interest Formula | $A = Pe^{APR \times Y}$ |
| Savings Plan Formula | $A = PMT \cdot \frac{\left(1 + \frac{APR}{n}\right)^{nY} - 1}{\frac{APR}{n}}$ |
| Loan Payment Formula | $PMT = P\frac{\frac{APR}{n}}{1 - \left(1 + \frac{APR}{n}\right)^{-nY}}$ |

1. **[5 points each]** To save for your child's college education, you would like to have $\$25,000$ when they are grown 18 years from today. You decide to make monthly deposits into a savings account earning an APR of 5% compounded monthly.

   (a) What should your monthly payment be?

   (b) How much will you earn in interest over the next 18 years?

2. **[5 points each]** You take out a 30 year mortgage for $\$200,000$ with monthly payments. The mortgage has an APR of 4.25% compounded monthly.

   (a) What is your monthly payment?

   (b) How much is your total payment over the 30 years?