MATH 373
Quiz 3
Spring 2018
February 13, 2018

1. Tyler purchases a US Treasury Bill that matures for 15,000 in 150 days. The Quoted Rate on this US Treasury Bill is 8.25%.

   Determine the annual effective interest rate that Tyler will earn on the US Treasury Bill. Your answer should be accurate to five decimal places.

2. Emily makes a loan of 100,000 to the US Government. Under the loan, the US Government will pay an annual rate of 3.5% compounded continuously plus the annual rate of inflation each year compounded continuously. Since US Government is considered a risk free borrower, there is no charge for default.

   The annual rate of inflation compounded continuously is 2.3% during the first year, 4.2% during the second year, and $x\%$ during the third year.

   At the end of three years, Emily receives a payment of 124,358.71 to repay the loan.

   Determine x. Your answer should be accurate to five decimal places.

3. Brinkers Bank makes 4 year loans to college students. Brinkers wants to receive an annual rate of 2.5% compounded continuously to compensate for deferred consumption. Additionally, Brinkers expects that inflation will occur at an annual rate of 3.1% compounded continuously over the next four years. However, since the inflation rate could be higher, Brinkers would like to receive an annual rate of 0.25% compounded continuously as compensation for the inflation risk.

   Additionally, Brinkers expects 5% of the loans to default with a loan recovery rate of 42%.

   Determine the annual rate compounded continuously that Brinkers should charge for defaults. Your answer should be accurate to five decimal places.