

NAME:

Problem 1 (5 points): *In 1753, upon turning into a vampire, Angel decides to invest the \$1 he has in his pockets in a savings account earning 5% interest compounded annually. How much money does Angel have in his account when he decides to withdraw all his money to start up a private investigation firm 245 years later?*

Solution: The balance in Angel's account is:

$$\$1 \cdot (1.05)^{245} \approx \$155,373.97.$$

Problem 2 (5 points): *Realizing that he needs a cool car, and having spent all his savings on office space, Angel decides to take out a \$30,000 loan to purchase a black '67 Plymouth GTX. If the interest on the loan is 12% a year, how much will his monthly payments be if he amortizes the loan over a period of 3 years?*

Solution: Angel's monthly payments will be:

$$\$ \frac{30,000 \cdot (.01)}{1 - (1.01)^{-36}} \approx \$996.43.$$

Problem 3 (5 points): *After discovering the size of the monthly payments if he amortizes his loan over a period of 3 years, Angel decides to take advantage of his immortality by amortizing the loan over a period of 150 years. What will his monthly payments be in this case?*

Solution: In this case, Angel's monthly payments will be:

$$\$ \frac{30,000 \cdot (.01)}{1 - (1.01)^{-1800}} \approx \$300.00.$$