

CISC 1100 - HW 6

NAME:

1) Prove the following formula via induction:

$$\sum_{n=0}^k a_r^n = a_0 \left(\frac{1 - r^{k+1}}{1 - r} \right)$$

a) State predicate $p(k)$ which we are proving.

b) Show the base case when $k = 0$. This may feel rather obvious.

c) Complete the proof by showing that $p(k) \Rightarrow p(k + 1)$.

2) Write out the full Euclidean algorithm to find the GCD of 36, 42.

3) a) In five years, what is the future value of an account with 4.2% annual interest rate, compounding quarterly (4 times a year), if \$5,000 is invested today?

b) Suppose that you have another option, with 3.9% annual interest rate but compounding monthly. Calculate the future value of this account with the same \$5,000 investment. Which is the better option?