CISC 1100 - HW 7

NAME:

1) Let's prove the future value formula by induction. The formula is (using i, n):

$$A = P(1+i)^n$$

a) State predicate $p(n)$ which we are proving. Hint: this is the formula.

b) Show the base case when $n = 0$. Hint: plug in 0 for n.

c) Complete the proof by showing that $p(n) \Rightarrow p(n+1)$. Hint: $p(n)$ is the future value on period n, and $p(n+1)$ is the future value at period $n+1$. Plug in A from $p(n)$ as P for $p(n+1)$ and compute.

2) You are offered 3 investment opportunities: a savings account at 3.4% compounding daily, a savings account at 3.8% compounding monthly, or an annuity at 4.8% compounding monthly. If you are investing \$5000 over a 3 year period, compute the future value of each option and determine which is best.

3) a) How many ways can a 5 person committee be chosen from 17 students?

b) There have been 45 presidents. If I make a second Mount Rushmore, how many ways can I do so? (There are 4 presidents on Mount Rushmore.)

4) a) If we are electing a president, vice president and secretary from our 22 person class, what is the probability you are president?

b) What's the probability that you are vice president?

c) What's the probability that you get any position?