Worksheet 10 Name:_____
A&S100
27 November 2002

1. Solve for the variable. Round your final answer to eight decimal places.
   (a) $(1+t)^6 = 27$ where $1+t > 0$
   (b) $(2.5)^{2x} - 6 = 53$
   (c) $\frac{q^7-1}{.43} = 16.5$
   (d) $23.4 = \frac{1+6.5^z}{0.53}$
   (e) $\frac{1}{2^x} = 63$
2. In the lyrics to "Seasons of Love" from the musical *Rent*, the song writer states that there are $525,600$ minutes in a year. Verify his claim.
3. On 01 January 2000, Joni invested \$100 in an account at the simple interest rate of 7% per year.
   (a) How much money would she have on 31 December 2005?
   (b) Since the interest rate is a simple interest rate, she only earns interest on the amount of money she deposits. Suppose that interest payments are made on 31 December each year. What could she do to increase the amount of interest she earns?
   (c) Again, suppose that interest payments are made on 31 December each year. How much money would Joni have on 31 December 2005 if she removed all of the money from her account each 01 January and redeposited all the money on 02 January?
4. (a) Find the following sums.
      i. $1+3$
      ii. $1+3+3^2$
      iii. $1+3+3^2+3^3$
      iv. $1+3+3^2+3^3+3^4$
   (b) Find the following sums.
      i. $1+(-2)$
      ii. $1+(-2)+(-2)^2$
      iii. $1+(-2)+(-2)^2+(-2)^3$
      iv. $1+(-2)+(-2)^2+(-2)^3+(-2)^4$
   (c) Find a formula for $1+3+3^2+3^3+3^4+\ldots 3^k$
   (d) Find a formula for $1+(-2)+(-2)^2+(-2)^3+(-2)^4+\ldots(-2)^k$
   (e) Find a formula for $1+r+r^2+\cdots+r^k$ when $r=1$.
   (f) Find a formula for $1+r+r^2+\cdots+r^k$ when $r \neq 1$.
   (g) Find a formula for $5+5*3+5*3^2+5*3^3+5*3^4+\ldots 5*3^k$