Worksheet 15
Compound Interest

Compound Interest: $A = P(1 + \frac{r}{m})^{mt}$

Continuous Compound Interest: $A = Pe^{rt}$

APY Compound Interest: $APY = (1 + \frac{r}{m})^m - 1$

APY Continuous Compound Interest: $APY = e^r - 1$

1) A newborn child receives a $5000 gift towards a college education from her grandparents. How much will the gift be worth in 17 years, if it is invested at 7% compounded quarterly?

2) A bank is offering a CD that pays 6% compounded continuously. How much would a deposit of $2000 earn over 8 years?
3) You receive a $5000 gift which you want to invest for 3 years. Should you choose an investment paying 4.5% interest compounded monthly or one paying 4.25% interest compounded continuously?

4) How much should you invest at 4.8% compounded continuously to have $5000 in $2\frac{1}{2}$ years?

5) If the population of a country is growing at a rate of 2.2% compounded annually, how long will it take the population of 60,000 people to double?

6) What is the annual percentage yield for a nominal rate of:
   a) 5% compounded semiannually?
   b) 5.5% compounded continuously?