MATH 180 HOMEWORK
INTEREST THEORY: TERMINOLOGY, SIMPLE, AND EFFECTIVE INTEREST

DUE THURSDAY, NOVEMBER 1 AT THE BEGINNING OF CLASS

(1) Consider the amount function $A(t) = t^2 + 2t + 3$.
   (a) Find the principal.
   (b) Find the corresponding accumulation function a(t).
   (c) Find I_n.

(2) Assume that $A(t) = 100 + 5t$, where t is is years.
   (a) Find the principal.
   (b) What type of interest is this amount function describing?
   (c) How much is the investment worth after 5 years?
   (d) How much is earned on this investment during the 5^{th} year?
   (e) Find the effective rate of interest i_5 for the 5^{th} year.
   (f) Find the effective rate of interest i_{10} for the 10^{th} year.

(3) For this problem, assume a yearly simple interest rate of 7.8%
   (a) In how many years will \$500 accumulate to \$630?
   (b) Find the future value in 10 years of \$500 now.
   (c) Find the present value of \$890 in 10 years.

(4) Suppose you invest \$100 in a fund earning simple interest at 8% per year. But you find a better fund, so two years later, you withdraw the investment (principal + interest) and invest it in the new fund earning 10% yearly simple interest. How much time will be required for the original \$100 to accumulate to \$200?

(5) If \$64 grows to \$128 in four years at a constant effective annual interest rate, how much will $\$10,000$ grow to in three years at the same rate of interest?