Savings

At your childs birth, you begin contributing monthly to a college fund. The fund pays an APR of 4.8% compounded monthly. You figure that your child will need $40,000 at age 18 to begin college. What monthly deposit is required?

If a retirement fund is set up as a perpetuity, one withdraws each month only the interest accrued over that month; the principal remains the same. For example, suppose you have accumulated $500,000 in an account with a monthly interest rate of 0.5%. Each month, you can withdraw $500,000 ⋅ 0.005 = $2500 in interest, and the nest egg will always remain at $500,000. That is, the $500,000 perpetuity has a monthly yield of $2500. In general, the monthly yield for a perpetuity is given by the formula:

Monthly perpetuity yield = Nest egg × Monthly interest rate.

In this formula, the monthly interest rate is expressed as a decimal.

Suppose we have a perpetuity paying an APR of 6% compounded monthly. If the value of our nest egg (that is, the present value) is $800,000, find the amount we can withdraw each month. Note: First find the monthly interest rate.