Time Value of Money Practice Problems

FV of a lump sum

i. A company's 2005 sales were $100 million. If sales grow at 8% per year, how large will they be 10 years later, in 2015, in millions?

PV of a lump sum

ii. Suppose a U.S. government bond will pay $1,000 three years from now. If the going interest rate on 3-year government bonds is 4%, how much is the bond worth today?

Interest rate on a simple lump sum investment

iii. The U.S. Treasury offers to sell you a bond for $613.81. No payments will be made until the bond matures 10 years from now, at which time it will be redeemed for $1,000. What interest rate would you earn if you bought this bond at the offer price?

Number of periods

iv. Addico Corp's 2005 earnings per share were $2, and its growth rate during the prior 5 years was 11.0% per year. If that growth rate were maintained, how long would it take for Addico's EPS to double?

PV of a perpetuity

v. What's the present value of a perpetuity that pays $100 per year if the appropriate interest rate is 6%?

Rate of return on a perpetuity

vi. What's the rate of return you would earn if you paid $1,500 for a perpetuity that pays $105 per year?

PV of an uneven cash flow stream

vii. At a rate of 8%, what is the present value of the following cash flow stream? $0 at Time 0; $100 at the end of Year 1; $300 at the end of Year 2; $0 at the end of Year 3; and $500 at the end of Year 4?

Compounding more than once in a year

viii. What is the future value of $2,100 in 17 years assuming an interest rate of 8.4 percent compounded semiannually?

Effective annual rate

ix. The going rate on student loans is quoted as 8 percent per annum. The terms of the loans call for monthly payments. What is the effective annual rate (EAR) on such a student loan?