Financial Mathematics 2018/2019

Exercises 2

1. An investor wishes to accumulate 10 000 PLN in a fund at the end of 4 years. To accomplish this the investor plans to make deposits at the beginning of each month. How much should be each deposit if the simple interest rate is 9% per annum. Rework example with deposits at the end of each month.
2. Consider an annuity-due paying 10 PLN at the beginning of every month for 6 years. The simple interest rate is 8% per annum. What an amount of money you should pay at the end of each year for 6 years to obtain the same future value if the simple interest rate is 12% per annum.
3. Find the accumulated value at the end of six months of a fund in which 10 PLN, 20 PLN, and 30 PLN are deposited respectively at the beginning of the first three months, and at the end of the next three months the same amounts and in the same order are withdrawn. The simple interest rate is 10% per annum.
4. At what of simple interest, the future value of annual annuity-due at the end of 3years is twice the present value of annual annuity-immediate at the end of 5 years. The value of both types of payments is the same.
5. An investor wishes to accumulate 100 PLN. How many months must an investor pay monthly annuity-due of 8 PLN if the simple interest rate is 24% per annum. Solve the problem of non-integer value of the term of annuities.
6. If at the beginning of each year, an investor deposited 100 PLN into a savings account that paid 6%, compounding monthly, how much would investor have at the end of 10 years?
7. Find the present value of an annuity which pays 300 PLN at the end of each quarter for 10 years if the rate of interest is 9% convertible monthly (quarterly, semi-annually, annually).
8. Find the accumulated value at the end of five years of a fund if 5 PLN was deposited at the beginning of each month and 30 PLN was withdrawn at the end of each semi-year. The interest rate was 8% compounded quarterly.
9. An investor wishes to accumulate 100 PLN. How many years must the investor pay 20 PLN at the beginning of each year if the interest rate is 11% per annum, compounding annually. Solve the problem of non-integer value of the term of annuities.
10. Find the future value of an annuity which pays 2 PLN at the beginning of each year for 4 years if the interest rate is 10% per annum continuously compounded. Rework example with deposits at the end of each year.