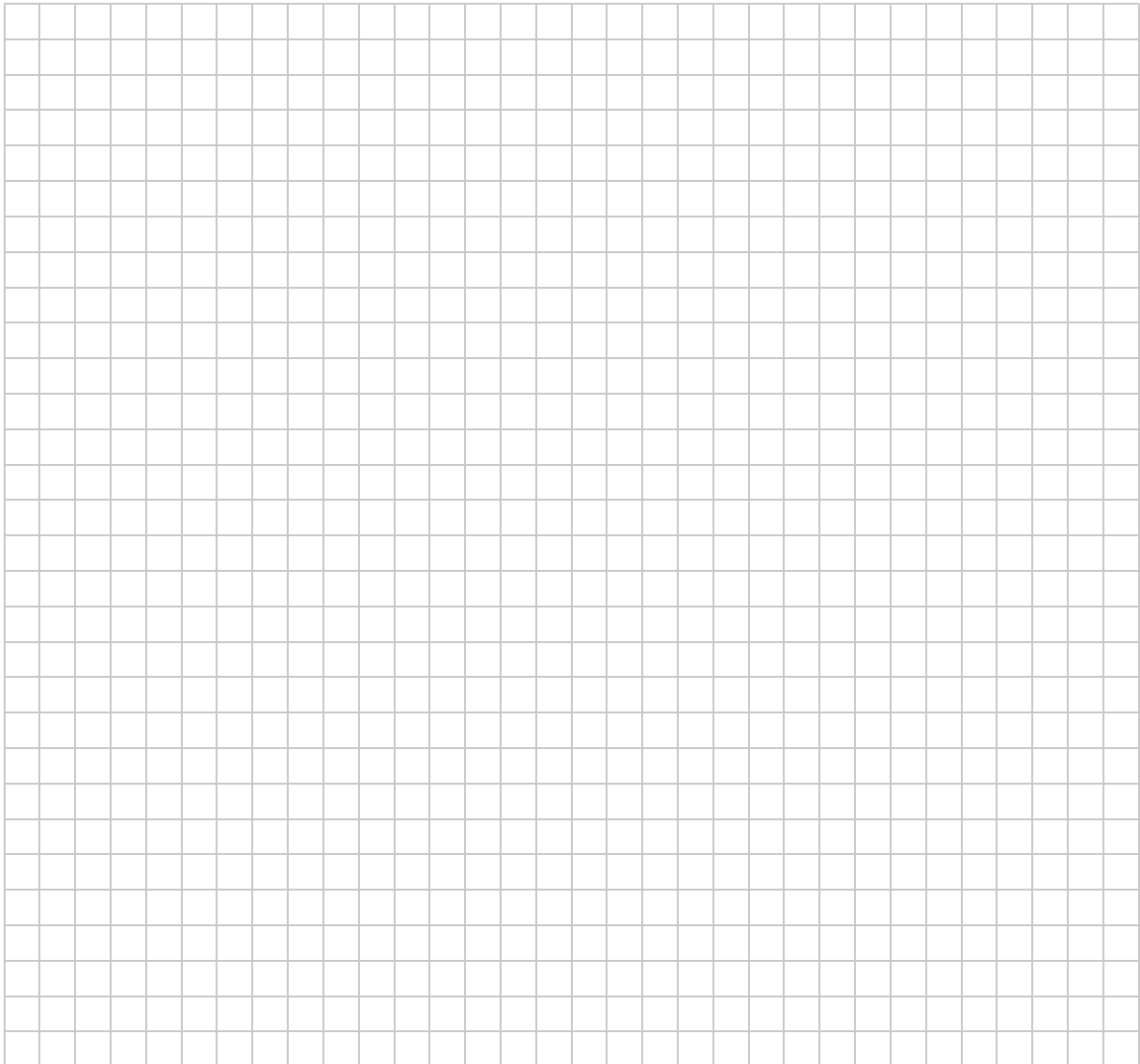


Question 8**(55 marks)**

- (a) When a loan of € P is repaid in equal repayments of amount € A , at the end of each of t equal periods of time, where i is the periodic compound interest rate (expressed as a decimal), the formula below can be used to find the amount of each repayment.

$$A = P \frac{i(1+i)^t}{((1+i)^t - 1)}$$

Show how this formula is derived. You may use the formula for the sum of a finite geometric series.



This question is continued on the next page

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- (b)** Alex has a credit card debt of €5000. One method of clearing this debt is to make a fixed repayment at the end of each month. The amount of this repayment is 2.5% of the original debt.

(i) What is the fixed monthly repayment, $\text{€}A$, required to pay the debt of $\text{€}5000$?

