

## Formulas for exam 2

**Simple Interest:**  $INT = PV rt$ .

**Future Value for Simple Interest:**  $FV = PV + INT = PV + PV rt = PV(1 + rt)$ .

**Present Value for Simple Interest:**  $PV = \frac{FV}{1+rt}$ .

**Future Value for Compound Interest**

$$FV = PV \left(1 + \frac{r}{m}\right)^{mt} \quad \text{or} \quad FV = PV(1 + i)^n$$

where  $i = r/m$  is the interest paid each compounding period and  $n = mt$  is the total number of compounding periods.

**Present Value for Compound Interest**

$$PV = \frac{FV}{\left(1 + \frac{r}{m}\right)^{mt}} \quad \text{or} \quad PV = \frac{FV}{(1 + i)^n} = FV(1 + i)^{-n}$$

**Effective Interest Rate**

$$r_{\text{eff}} = \left(1 + \frac{r_{\text{nom}}}{m}\right)^m - 1$$

**Sinking Fund:**

$$FV = PMT \frac{(1 + i)^n - 1}{i}$$

where  $i = r/m$  is the interest paid each compounding period and  $n = mt$  is the total number of compounding periods.

**Payment Formula for a Sinking Fund**

$$PMT = FV \frac{i}{(1 + i)^n - 1}$$

where  $i = r/m$  is the interest paid each compounding period and  $n = mt$  is the total number of compounding periods.

**Present Value of an Annuity**

$$PV = PMT \frac{1 - (1 + i)^{-n}}{i}$$

where  $i = r/m$  is the interest paid each compounding period and  $n = mt$  is the total number of compounding periods.

**Payment Formula for an Ordinary Annuity**

$$PMT = PV \frac{i}{1 - (1 + i)^{-n}}$$

where  $i = r/m$  is the interest paid each compounding period and  $n = mt$  is the total number of compounding periods.