Some Formulas to Keep in Mind for the Midterm Exam

1. The formula relating the real rate of return to the nominal interest rate of interest and the rate of inflation, with annual compounding, is:

\[
\text{Real Rate} = \frac{\text{Nominal Interest Rate} - \text{Inflation Rate}}{1 + \text{Inflation Rate}}.
\]

2. For 'single cash flows', the relationship between \( FV \) and \( PV \), given \( i \) (expressed as a decimal fraction) and \( n \), is:

\[
FV = PV \times (1 + i)^n \quad \iff \quad PV = \frac{FV}{(1 + i)^n}.
\]

3. Given an \( APR \), the \( EFF \) is found by:

\[
EFF = (1 + \frac{APR}{m})^m - 1, \quad \text{where}
\]

\( m \) is the number of compounding periods.

4. For an ordinary annuity of $1 per period for \( n \) periods at an interest \( i \) (expressed as a decimal fraction), the formula for \( FV \) is:

\[
FV = \frac{(1+i)^n-1}{i}.
\]

5. For an ordinary annuity of $1 per period for \( n \) periods at an interest rate \( i \) (expressed as a decimal fraction), the formula for \( PV \) is:

\[
PV = \frac{1-(1+i)^{-n}}{i}.
\]

6. The formula for the \( PV \) of a level perpetuity is:

\[
PV \text{ of a Level Perpetuity} = \frac{C}{i}, \quad \text{where}
\]

\( C \) is the periodic payment and \( i \) is the interest rate (expressed as a decimal fraction).