**Matheus Raka Pradnyatama**

**Credit Markets – Homework 3**

**Part 1. a)**

For the duration formula, we are given:

Therefore,

We are given:

Take the natural log,

Take the derivative,

We have proven that

**Part 1. b)**

For the duration formula, we are given:

Therefore,

We are given:

Take the natural log,

Take the derivative,

We have proven that

**Part 4. a)** Price of a Bond:

For a perpetual bond:

If the face notional is $100, we need to multiply the above formula with 100. The price of the perpetual bond becomes:

**Part 4. b)** Priced at Par,

The yield that makes the perpetual bond trade “at par” is , the semi-annual yield.

If the semi-annual yield () matches the semi-annual coupon , the perpetual bond will trade “at par”.

**Part 4. c) DV01 and Duration of Perpetual Bond**

**Part 4. d) Convexity**