Fin 533
Bonds Test Equations

$$HPR = \frac{P_1 - P_0 + CF_1}{P_0}$$

$$Accrued\ \text{interest} = \frac{annual\ coupon}{2} \times \frac{days\ \text{since last coupon payment}}{days\ \text{separating coupon payments}}$$

$$(1+f_n) = \frac{(1+y_n)^n}{(1+y_{n-1})^{n-1}} \qquad (1+y_n)^n = (1+y_{n-1})^{n-1}(1+f_n)$$

$$w_t = \frac{\frac{CF}{(1+y)^t}}{\text{Price}} \qquad D = \sum_{t=1}^{T} t \times w_t$$

$$\frac{\Delta P}{P} = -D \times \left[\frac{\Delta(1+y)}{1+y}\right] \qquad \frac{\Delta P}{P} = -D^* \times \Delta y \qquad where\ D^* = \frac{D}{(1+y)}$$

$$Convexity = \frac{1}{P \times (1+y)^2} \sum_{t=1}^{T} \left[\frac{CF_t}{(1+y)^t}(t^2+t)\right]$$

$$\frac{\Delta P}{P} = -D^* \times \Delta y + \frac{1}{2} \times Convexity \times (\Delta y)^2$$

Duration rule 5: $\frac{1+y}{y}$ Duration rule 6: $\frac{1+y}{y} - \frac{T}{(1+y)^T - 1}$.

Duration rule 7: $\frac{1+y}{y} - \frac{(1+y)+T(c-y)}{c\left[(1+y)^T - 1\right]+y}$