The following formulas may or may not be helpful.

$e \approx 2.71828$

$E(R) = \sum_{i=1}^{N} p_i R_i$

$\sigma^2(R) = E[R-E(R)]^2 = \sum_{i=1}^{N} p_i [R_i - E(R)]^2$

$\sigma_{12} = E[R_1-E(R_1)][R_2-E(R_2)] = \sum_{i=1}^{N} p_i [R_{1i}-E(R_1)][R_{2i}-E(R_2)]$ or $(1/N)\sum_{i=1}^{N} [R_{1i}-E(R_1)][R_{2i}-E(R_2)]$

$\rho = \sigma_{12}/(\sigma_1\sigma_2)$

$\sigma_{12} = \rho(\sigma_1\sigma_2)$

Long Mgn = (value of assets – amount borrowed) / (value of assets)

Short Mgn = (value of assets – value of securities sold short) / (value of securities sold short)

$\sigma_p^2 = \sum_{i=1}^{N} X_i^2 \sigma_i^2 + \sum_{i \neq j}^{N} \sum^{N} X_i X_j \sigma_{ij}$

$\sigma_p^2 = (1/N)[\bar{\sigma}_i^2] + (N-1)/N\,[\bar{\sigma}_{ij}]$

$w_1^* = [\sigma_2^2 - \rho\sigma_1\sigma_2] / [\sigma_1^2 + \sigma_2^2 - 2\rho\sigma_1\sigma_2] = [\sigma_2^2 - \sigma_{12}] / [\sigma_1^2 + \sigma_2^2 - 2\sigma_{12}]$;

$w_2^* = 1 - w_1^*$

$P^* = D/(k - g)$

$P^* = D/(k - rb)$

$g = rb$

$k^* = (D/P_t) + g$

$k^* = (D/P_t) + rb$

$E_i = a + b\,E_E + c\,E_I + \varepsilon_I$

$R_i = \alpha_i + \beta_i R_m + \varepsilon_i$

$R_i = a_i + b_{im} R_m + b_{ik} I_k + c_i$

$E(R_i) = \alpha_i + \beta_i E(R_m)$

$E(R_i) = a_i + b_{im} E(R_m) + b_{ik} E(I_k)$

$\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma_{\varepsilon i}^2$

$\sigma_i^2 = b_{im}^2 \sigma_m^2 + b_{ik}^2 \sigma_k^2 + \sigma_{ci}^2$

$\sigma_{ij} = \beta_i \beta_j \sigma_m^2$

$\sigma_{ij} = b_{im} b_{jm} \sigma_m^2 + b_{ik} b_{jk} \sigma_k^2$

$\alpha_p = \Sigma X_i \alpha_i$

$\beta_p = \Sigma X_i \beta_i$

$E(R_p) = \Sigma X_i E(R_i) = [\Sigma X_i \alpha_i] + [\Sigma X_i \beta_i] E(R_m) = \alpha_p + \beta_p E(R_m)$

$\sigma^2(R_p) = \beta_p^2 \sigma^2(R_m) + \Sigma X_i^2 \sigma_{\varepsilon i}^2$

$R_{it} = \alpha_i + \beta_{im} R_{mt} + \varepsilon_{it}$

$R_{it} = a_i + b_{i1} I_{1t} + b_{i2} I_{2t} + e_{it}$

$E(R_i) = R_f + \beta_{im}[E(R_m)-R_f]$

$E(R_i) = \lambda_0 + \lambda_1 b_{i1} + \lambda_2 b_{i2}$

Sharpe Measure = $S = [E(R_i) - R_f] / \sigma_i$

Adjusted US Sharpe = $\{[E(R_i) - R_f] / \sigma_i\} * \rho_{US,i}$

$F^* = P(1 + R)$

$F^* = (P - I)(1 + R)$

$F^* = [(1 + R) / (1 + R_f)]\,S$

$c = [f_u P + f_d (1-P)]\, e^{-rT}$ where $P = (e^{r\Delta T} - d) / (u - d)$

$1+R_{i\$} = (1+R_i)(1+e_i)$

$R_{i\$} \cong R_i + e_i$

$E(R_{i\$}) \cong E(R_i) + E(e_i)$

$Var(R_{i\$}) \cong Var(R_i) + Var(e_i) + 2Cov(R_i,e_i)$

$$\sigma^2(R_{i\$p}) \cong \Sigma X_i^2 \sigma^2(R_i) + \sum_{i \neq j}\Sigma X_i X_j Cov(R_i,R_j)$$
$$\Sigma X_i^2 \sigma^2(e_i) + \sum_{i \neq j}\Sigma X_i X_j Cov(e_i,e_j)$$
$$+ \sum_{i \neq j}\Sigma X_i X_j Cov(R_i,e_j)$$

$B = \sum_{i=1}^{n} c_i e^{-y(t_i)}$

$\Delta B/\Delta y = -BD$

$D = [\sum_{i=1}^{n} (t_i)\, c_i e^{-y(t_i)}] / B$

$\Delta B/B = -D\,\Delta y$