

Previously :

Ax

b

$$R_1 = - \left[2\sigma_1^2 M_{11} \frac{\partial^2 X_1}{\partial S_1^2} + 2\sigma_2^2 M_{11} \frac{\partial^2 X_1}{\partial S_2^2} \right] - \frac{\partial M_{11}}{\partial X_1} \left[\sigma_1^2 \frac{\partial X_1}{\partial S_1} \frac{\partial X_1}{\partial S_1} + \sigma_2^2 \frac{\partial X_1}{\partial S_2} \frac{\partial X_1}{\partial S_2} \right] - 2 \frac{\partial M_{11}}{\partial X_2} \left[\sigma_1^2 \frac{\partial X_2}{\partial S_1} \frac{\partial X_1}{\partial S_1} + \sigma_2^2 \frac{\partial X_2}{\partial S_2} \frac{\partial X_1}{\partial S_2} \right] + \frac{\partial M_{22}}{\partial X_1} \left[\sigma_1^2 \frac{\partial X_2}{\partial S_1} \frac{\partial X_2}{\partial S_1} + \sigma_2^2 \frac{\partial X_2}{\partial S_2} \frac{\partial X_2}{\partial S_2} \right] = 0$$

$$R_2 = - \left[2 \sigma_1^2 M_{22} \frac{\partial^2 X_2}{\partial S_1^2} + 2 \sigma_2^2 M_{22} \frac{\partial^2 X_2}{\partial S_2^2} \right] - \frac{\partial M_{22}}{\partial X_2} \left[\sigma_1^2 \frac{\partial X_2}{\partial S_1} \frac{\partial X_2}{\partial S_1} + \sigma_2^2 \frac{\partial X_2}{\partial S_2} \frac{\partial X_2}{\partial S_2} \right] - 2 \frac{\partial M_{22}}{\partial X_1} \left[\sigma_1^2 \frac{\partial X_1}{\partial S_1} \frac{\partial X_2}{\partial S_1} + \sigma_2^2 \frac{\partial X_1}{\partial S_2} \frac{\partial X_2}{\partial S_2} \right] + \frac{\partial M_{11}}{\partial X_2} \left[\sigma_1^2 \frac{\partial X_1}{\partial S_1} \frac{\partial X_1}{\partial S_1} + \sigma_2^2 \frac{\partial X_1}{\partial S_2} \frac{\partial X_1}{\partial S_2} \right] = 0$$

Now try:

Ax

b

$$R_1 = \left[2\sigma_1^2 M_{11} \frac{\partial^2 X_1}{\partial S_1^2} + 2\sigma_2^2 M_{11} \frac{\partial^2 X_1}{\partial S_2^2} \right] - \frac{\partial M_{11}}{\partial X_1} \left[\sigma_1^2 \frac{\partial X_1}{\partial S_1} \frac{\partial X_1}{\partial S_1} + \sigma_2^2 \frac{\partial X_1}{\partial S_2} \frac{\partial X_1}{\partial S_2} \right]$$

$$- 2 \frac{\partial M_{11}}{\partial X_2} \left[\sigma_1^2 \frac{\partial X_2}{\partial S_1} \frac{\partial X_1}{\partial S_1} + \sigma_2^2 \frac{\partial X_2}{\partial S_2} \frac{\partial X_1}{\partial S_2} \right] + \frac{\partial M_{22}}{\partial X_1} \left[\sigma_1^2 \frac{\partial X_2}{\partial S_1} \frac{\partial X_2}{\partial S_1} + \sigma_2^2 \frac{\partial X_2}{\partial S_2} \frac{\partial X_2}{\partial S_2} \right] = 0$$

$$R_2 = - \left[2\sigma_1^2 M_{22} \frac{\partial^2 x_2}{\partial S_1^2} + 2\sigma_2^2 M_{22} \frac{\partial^2 x_2}{\partial S_2^2} \right] - \frac{\partial M_{22}}{\partial x_2} \left[\sigma_1^2 \frac{\partial x_2}{\partial S_1} \frac{\partial x_2}{\partial S_1} + \sigma_2^2 \frac{\partial x_2}{\partial S_2} \frac{\partial x_2}{\partial S_2} \right]$$

$$- 2 \frac{\partial M_{22}}{\partial x_1} \left[\sigma_1^2 \frac{\partial x_1}{\partial S_1} \frac{\partial x_2}{\partial S_1} + \sigma_2^2 \frac{\partial x_1}{\partial S_2} \frac{\partial x_2}{\partial S_2} \right] + \frac{\partial M_{11}}{\partial x_2} \left[\sigma_1^2 \frac{\partial x_1}{\partial S_1} \frac{\partial x_1}{\partial S_1} + \sigma_2^2 \frac{\partial x_1}{\partial S_2} \frac{\partial x_1}{\partial S_2} \right] = 0$$