Excel Solver:

x1	0.324141
x2	0.835994
x3	0.367683

F	-1549.59

MATLAB Optimization Toolbox:

x1	0.3241	F
x2	0.836	-1549.6
x3	0.3677	

Fletcher Reeves:

- Convergence Criteria used:
  - Golden Section: $\frac{L(i)}{L\_initial} \leq 0.001$
  - Fletcher Reeves: $Norm\left(\vec{x}^{i+1} - \vec{x}^{i}\right) \leq 0.001$ || $Norm(\nabla F) \leq 0.001$
- x_min =
  0.3240
  0.8350
  0.3677
  F_min = -1.5496e+03

1. Function Calls for Analytical Derivative method = 245
2. Function Calls for Central Difference method = 287

BFGS:

- Convergence Criteria used:
  - Golden Section: $\frac{L(i)}{L\_initial} \leq 0.001$
  - BFGS: Norm$\left(\vec{x}^{i+1} - \vec{x}^{i}\right) \leq 0.001$ && Norm(C(i)) ≤ 0.001
- x_min =
  0.3241
  0.8360
  0.3677
- F_min = -1.5496e+03

1. Function Calls for Analytical Derivative method = 195
2. Function Calls for Central Difference method = 231

Comparison:

BFGS requires lesser function calls than Fletcher-Reeves. One of the factors could be that Fletcher-Reeves takes a greater number of iterations to converge to the solution (7 as compared to 5 iterations of BFGS).

When central difference approach is used to approximate the derivative instead of solving analytically, the number of function calls naturally increases. Despite the approximation, the number of iteration and the solution (up to 3 decimals) remains the same.