Solutions for Assignment h4

1. $f(x) = x^2 - x - 2,\ g(x) = e^{-x} - x,\ h(x) = x + 4 + \frac{1}{3}\sin(2x).$

(a) $X_{n+1} = X_n - \frac{X_{n-X_{n-2}}^2}{2X_n - 1},\ X_0 = 1.0$

(b) $X_{n+1} = \sqrt{X_n + 2},\ X_0 = 1.0,$ or -1.5 (?)

(c) fzero(@(x)(x^2-2*x-2), 1.0) = 2

f(zero(@(x)(x^2-2*x-2), -0.2) = -1

f(zero(@(x)(exp(-x)-x), 0) = 0.5671

f(zero(@(x)(x+4+sin(2*x)/3), -1) = -3.7003

2. Initial guess [1; 2; 3] ➔ Solution X=[2.1659; 1.4493; 1.4625]
   Initial guess [-2; 1; -2] ➔ Solution X=[-1.6330; -5.4442; -2.8090]

3. Initial guess [1; 2; 3] ➔ Solution X= [0.2970; 0.6748; 0.7307]
   Initial guess [-2; -3; 1] ➔ Solution X=[-3.2888; -0.1178; 0.1989]
   Initial guess [2; 1; 1] ➔ Solution X=[2.9960; 1.1613; 1.0934]

4. Initial guess [1; 2; 4] ➔ Solution X=[0.9124; 0.9583; 0.0438]
   Initial guess [-2; -3; 0.1] ➔ Solution X=[0.9124; 0.9583; 0.0438]