Midterm Project 1

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import numpy as np

def f(x):
    if x % 2 == 0:
        return x/2
    if x % 2 == 1:
        return 3*x+1

def C(n):
    if n == 1:
        return 0
    fun = f(n)
    for i in range(1,1000): #1000 was an arbitrary choice. Is there a max_iter?
        if fun == 1:        #I only broke it by too large of n, never got iter > 1000
            return i
        fun = f(fun)

A = [[C(6),C(2),C(3)],[C(4),C(11),C(6)],[C(7),C(8),C(16)]]
b = [14,-4,17]

x = np.linalg.solve(A,b)

A_bonus =[[C(7),C(2),C(3),C(4),C(5)],[C(6),C(27),C(8),C(9),C(10)],\
          [C(11),C(12),C(55),C(14),C(15)],[C(16),C(17),C(18),C(62),C(20)],\
              [C(21),C(22),C(23),C(24),C(102)]]

b_bonus = [72,345,521,551,247]

x_bonus = np.linalg.solve(A_bonus,b_bonus)

```