Homework Assignment 13
Due on Friday 01/11

Programming Problems:

1. Write a Matlab code that solves

$$y(a) = \alpha, \quad y'(t) = f(t, y) \quad \forall\, t \in [a, b]$$

by using classical RK4 method. Your code should take a, b, h, f, α as inputs and return w_i as outputs, where h is the step size and w_i is an approximation for y_i. Your code should also work for system, i.e., $y(t)$ and α can be vectors.

2. (**Bonus Problem. Add one point in final grade.**) Write a Matlab code that simulates three-body problem with any given masses, initial positions and velocities. Also give a set of data that generates an interesting orbit.

Save your codes as function M-file and submit it to num_ana@math.nthu.edu.tw

Writing Problems:

Do the following exercise problems in the text book by Bradie,
Sec 7.3: 2(c,d)*, 4(a,c), 7(a), 8(c)
Sec 7.4: 2*, 8(a), 10(a), 12, 14(a), 18*
Sec 7.8: 1(a), 2(a), 7(a, c)*, 8(a, b, c)*, 11(a), 16, 17
We only discuss * problems in discussion section.