1. For the initial value problem \( y'(t) = 2t - y(t), y(0) = 2 \), use one step of RK4 to approximate \( y(2) \).

2. Given \( t_0 = 0, y_0 = 1, \) and \( t_1 = .5 \), compute an approximation to \( y(t_1) \) for \( y'(t) = 2y(t) + t \), by using one predictor step (Euler) and one corrector step (Backward Euler).

3. For the linear multistep method

\[
y_{n+1} = \alpha_1 y_n + h(\beta_0 f_{n+1} + \beta_1 f_n),
\]

find coefficients \( \alpha_1, \beta_0, \) and \( \beta_1 \) such that the method is exact for polynomials of degree as high as possible.