UMC 202
PROBLEM SET 3

(1) Use Newton's forward difference formula to construct interpolating polynomials of degrees one, two, and three for the following data.

   (a) $f(-1/3)$, if
   $f(-0.75) = -0.07181250$,
   $f(-0.5) = -0.02475$,
   $f(-0.25) = 0.3349375$,
   $f(0) = 1.101000$.

   (b) $f(0.25)$ if
   $f(0.1) = -0.62049958$,
   $f(0.2) = -0.28398668$,
   $f(0.3) = 0.00660095$,
   $f(0.4) = 0.24842440$.

(2) Redo Problem 1, by Newton's backward difference formula.

(3) Find the degree of the polynomial which interpolates the following data
   $f(-2) = 1$, $f(-1) = 4$, $f(0) = 11$, $f(1) = 16$, $f(2) = 13$, $f(3) = -4$.

(4) Use appropriate Lagrange interpolating polynomials of degrees one, two, and three to approximate the data given in Problem 1.