Assignment 5

Line and Plane Equations

1. Given three points $A(1,-2)$, $B(2,-1)$, and $C(0,3)$. Determine:
   a. Equation of the line through A and B in vector, parametric and Cartesian form.
   b. Equation of the line through A and C in vector, parametric and Cartesian form.
   c. Equation of the line through B and C in vector, parametric and Cartesian form.

2. Given three points $A(1,-1,-1)$, $B(-2,2,1)$, and $C(0,1,-2)$. Determine:
   a. Equation of the line through A and B in vector and coordinate form.
   b. Equation of the line through A and C in vector and coordinate form.
   c. Equation of the line through B and C in vector and coordinate form.

3. Given three points $A(1,-1,-1)$, $B(-2,2,1)$ and $C(0,1,-2)$. Determine:
   a. Equation of the plane through A, B and C and its normal vector.
   b. Equation of the line of intersection of plane in no.1 and plane $x+y+z+1=0$.
   c. Equation of the plane through A and orthogonal to vector $\overline{BC}$.
   d. Equation of the plane through B and parallel to plane $x+2y+3z+4=0$.
   e. Distance between C to plane $x-2y+2z-1=0$.