1. Find the point of intersection of the two lines
   \[ x = 2 \quad \quad x = 1 + s \]
   a) \[ y = 3 - 3t \quad \quad y = 4 + s \]
   \[ z = -2 - 2t \quad \quad z = -1 + s \]

   b) Find the equation of the plane determined by the two lines.

2) Find the distance from the point \((0, 1, 1)\) to the plane \(2x + y + z = 4\).

3) Find the parametric equation of the tangent line to the curve
   \[ r(t) = (\sin t, t, e^t) \quad \text{at} \quad t = 0 \]
4) Let \( r(t) = (t, t^3, t) \) for \( t \in [0, 3] \)
   a) Find the velocity and acceleration vector when \( t = 1 \).
   
   b) Find the curvature at the point \((1, 1, 1)\).
   
   c) Calculate the normal and tangential components of the acceleration vector at the point \((1, 1, 1)\).

5) A particle moves on the graph of \( y = x^4 \) from left to right at a constant speed of 2.
   
   a) Find the velocity vector at the point \((1, 1)\).
   
   b) Find the acceleration vector at the point \((1, 1)\).
6) A projectile is fired at an initial speed of 80 feet/sec and aimed at a tangent 100 feet down range (gravity is 32 feet/sec).

a) What are the two possible launching angles?

b) Using the smaller of the above angles, will the projectile clear a wall which is 10 feet high located 70 feet down range? Explain