Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (2 pts.) Find the equation of the sphere with center \((0, 1, 1)\) and radius 2.

2. (2 pts. each)
   
   (a) Find the vector \(\mathbf{a}\) represented by the directed line segment \(\overrightarrow{AB}\) where \(A = (2, -1)\) and \(B = (1, 4)\).

   (b) Sketch two different representations of the vector you found in part (a).

3. (2 pts. each) Let \(\mathbf{a} = (3, 4, 1)\) and \(\mathbf{b} = (1, 2, -3)\).

   (a) Find \(|\mathbf{a}|\) and \(|\mathbf{b}|\).

   (b) Find \(\mathbf{a} + \mathbf{b}\) and \(2\mathbf{a} - \mathbf{b}\).