QUIZ 2 (35MINS, 30PTS)

Please write down your name, SID, and solutions discernably.

Name : 

SID : 

Score :

1. (10pts) Find the slope of the tangent line to the given polar curve at the point specified by the value of $\theta$.

$$r = \sin \theta + 0.5, \theta = \frac{5\pi}{3}$$
2. (10pts) Find the area of 4 leaves of the graph of \( r = \sin 2\theta \).

3. (10pts : 2.5pts each) Determine whether the given vectors are orthogonal, parallel, or neither.
   a) \( \mathbf{a} = (-3, 2, 7), \mathbf{b} = (2, 3, 0) \)
   
   b) \( \mathbf{a} = (3, -5), \mathbf{b} = (9, -15) \)
   
   c) \( \mathbf{a} = \mathbf{i} + 7\mathbf{j} + 2\mathbf{k}, \mathbf{b} = -\mathbf{i} + 4\mathbf{j} + 13\mathbf{k} \)
   
   d) \( \mathbf{a} = -2\mathbf{i} + 8\mathbf{j} - 4\mathbf{k}, \mathbf{b} = 3\mathbf{i} - 12\mathbf{j} + 6\mathbf{k} \)