

**Assignment #01 – MATH 2421**  
Spring 2006

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Name: \_\_\_\_\_

- Attach this cover sheet to this assignment.
- Copy all of your work onto engineering pad paper!
- Give enough details about each problem so that I should NOT need to refer back to the text.  
I've given an example on the back of this page.
- Turn in the following:  
Section 9.1: #14, 16, 20, 22, 26, 36.  
Section 9.2: #4, 8, 18, 20, 22.  
Section 9.3: #8, 14, 20, 24, 30, 36.

### Section 9.3

(#17) (c) Determine whether the given vectors are orthogonal, parallel, or neither.

$$\mathbf{a} = \langle -1, 2, 5 \rangle \quad \mathbf{b} = \langle 3, 4, -1 \rangle$$

We will need the dot product in order to determine the angle of separation,  $\alpha$ .

$$\langle -1, 2, 5 \rangle \cdot \langle 3, 4, -1 \rangle = (-1)(3) + (2)(4) + (5)(-1) = 0.$$

Since the dot product is zero, the two vectors must be orthogonal.

$$\text{We have } \alpha = \frac{\pi}{2}.$$