

Math 241, Problem Set #2
(due **in class** Fri., 9/20/13)

Stewart, section 10.2, problems 2, 6, 18, 22, 30, 41.

Stewart, section 10.3, problems 11, 12, 20, 23, 33, 36, 44, 46.

Also:

- A. (a) Show algebraically that if \mathbf{a} , \mathbf{b} , \mathbf{c} are non-zero vectors in the x, y -plane such that $\mathbf{a} \cdot \mathbf{b} = \mathbf{b} \cdot \mathbf{c} = 0$, then \mathbf{a} and \mathbf{c} are parallel. (For simplicity, you may assume that all components of the vectors \mathbf{a} , \mathbf{b} , \mathbf{c} are non-zero.)
- (b) Give an example that shows that this assertion is false for vectors in 3-space.
- B. Given unit vectors \mathbf{a} , \mathbf{b} , \mathbf{c} in the x, y -plane such that $\mathbf{a} \cdot \mathbf{b} = \mathbf{b} \cdot \mathbf{c} = 0$, let $\mathbf{v} = \mathbf{a} + \mathbf{b} + \mathbf{c}$; what are the possible values of $|\mathbf{v}|$?
- C. Repeat the preceding problem, except that now \mathbf{a} , \mathbf{b} , and \mathbf{c} are unit vectors in 3-space.