

Let  $a, b$  and  $c$  be real numbers with  $|a| + |b| > 0$  (i.e. not both equal to zero).

Let  $L$  be the line given by  $L : ax + by + c = 0$ .

**Problem #1.** (*Hint to problem 2*)

(a) Find two points  $A$  and  $B$  which lie on the line  $L : ax + by + c = 0$ .

(b) Find the (components of the) vector  $\mathbf{a}$  with representation  $\vec{AB}$  (parallel to the line  $L$ ).

**Problem #2.** (*5 points*)

(a) Prove that the vector  $\langle -b, a \rangle$  is *parallel* to the line  $L$ ;

(b) Conclude that the vector  $\langle a, b \rangle$  is *orthogonal* to the line  $L$ .

**Note:**

This gives you a **VERY EASY WAY** of finding parallel and orthogonal vectors to a given line !