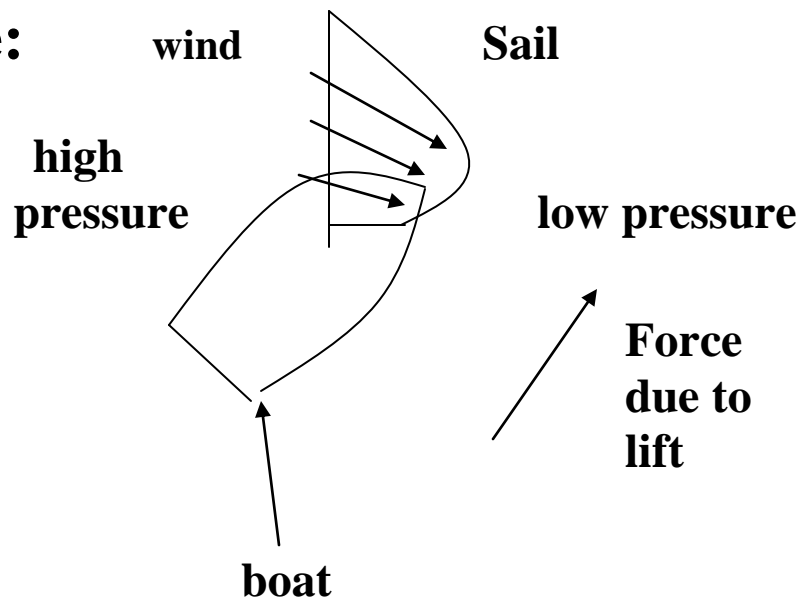


# Vectors and Sail Boats

**Sailboats are able to sail against the wind at an angle because of the resultant of a combination of several forces.**

**Lift: is a force created when a fluid (water or air) passes over and under an object that creates an area of high and low pressure.**

**Example:**



**\*Sailboats travel the fastest up wind because of the addition of all of the forces that are involved.**

**The keel (under the boat) also produces lift from the water that passes over it which prevents the boat from tipping over.**

**When a sailboat travels straight down wind the only force responsible for the velocity is the wind.**

**When a sailboat is at a specific angle (called “beam reach”) against the wind there are 4 different forces interacting to create the velocity of the boat.**

