

NEWTONS 2ND & 3RD.LAW

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S. Newman Darby, Inventor of the Sailboard, Dies at 88



S. Newman Darby in 1963. Credit Naomi Darby

S. Newman Darby, a sign painter whose passion for boating led him to invent a sailboard that is widely acknowledged as the first windsurfing craft, died on Dec. 3 at his home in St. Johns, Fla. He was 88.

Mr. Darby created his sailboard in 1964 out of frustration because the waves on lakes, like the one near his home in Wilkes-Barre, Pa., were not big enough to surf on.

His solution was to attach a sail to a surfboard, and the combination worked. But it was flawed: It could not turn sharply or go well against the wind. So he created a universal joint using a nylon rope to link the sail to the board. This enhanced his control of steering and speed. Mr. Darby's enthusiasm spilled over into an article he wrote for Popular Science magazine in 1965 about his invention. "Sailboarding is sailing with a difference," [he wrote](#). "You get all the fun of handling a fast, responsive boat. You can have the fun of spills without the work of righting and bailing out. He began a sailboard-making business and started to pursue a patent, but the growing cost of lawyers short-circuited the effort. Around the same time, two other men, Jim Drake and Hoyle Schweitzer, had devised their own version of a sailboard, and in 1970 they obtained a patent. They called their board the Skate before renaming it the Baja Board and finally the Windsurfer.

INTRODUCTION: Goal of this application is to sketch The four vector forces on sailboard. Essentially you will make a free body diagram of forces on sailboard.

QUESTIONS: (a) Sketch (on graphic at left) the vector force **F** from wind force on sail? (b) Sketch and show the vector force **f** of water friction ON sailboard? , (c) Sketch the normal force (normal forces are forces surfaces exert on objects) of water ON sailboard? This normal force would be the buoyant force **B**, (d) Sketch the gravity force (**mg**) on sailboard?

HINTS & ANSWERS: The horizontal vector forces **f** and **F** should be shown to be of the same length, but in opposite directions **ON** Sailboard. The vertical vector forces **B** & **mg** should be shown of the same length, but in opposite directions **ON** Sailboard. $a = 0$ in vertical & horiz. direction, thus forces in X & Y direction = 0, thus, $B - mg = 0$ & $F - f = 0$