

You are reading an article about the aesthetics of airplane design. One example described in the article is a beautiful new design for commercial airliners. You are worried that the light wing structure of this plane might not be strong enough to be safe. The article explains that an airplane can fly because the air exerts a force, called "lift," on the wings such that the lift is always perpendicular to the wing surface. For level flying, the wings are horizontal. To turn, the pilot "banks" the plane so that the wings are oriented at an angle to the horizontal. This causes the plane to have a trajectory which is a horizontal circle. The specifications of the 100×10^3 lb plane require that it be able to turn with a radius of 2.0 miles at a constant speed of 500 miles/hr. The article states that tests show that the new wing structure will support a force 4 times the lift necessary for level flight. Is the wing structure sufficiently strong for the plane to make this turn?