

1. What is the top speed that a boat could travel in rough water, if it has a 200 hp outboard motor, and the water exerts a resistive force of 8300 N?
2. If a V-12, 1700 kg Lamborghini Diablo can accelerate from rest to 60 mph (26.82 m/s) in 3.2 seconds, with an average of 1.8×10^4 N resistive force, how much horsepower does the Lamborghini Diablo have under the hood?

3. For wakeboarding enthusiasts who may not have a boat, they have to resort to something called a *winch*, which is a makeshift tow rope that can pull a wake boarder by engine power alone. The best winch around is called “The Grinch Winch” (give it a search on Youtube), a 7 hp winch with 600 m tow rope.

a. How fast would you be riding if you were pulled by the winch with a 400 N force?

b. How long would the ride be?