

Name _____

CE 3201 -- Recitation #1

Bicycle Race

It has been estimated that Tour-de-France champion Lance Armstrong could generate a sustained 500 Watts of power over a 20-minute period, while a healthy young human male (HYHM) can generate about 300 Watts of power for 20-minutes. Lance and HYHM are going to race (on bicycles) up a hill with a 6% upgrade, that is five miles long, and the elevation at the top of the hill is 5000 feet. Both rider/bicycle combinations weigh 170 lbs, with frontal area 0.36m^2 and coefficient of drag 0.88 (values being typical of bicyclists in crouched racing positions). The coefficient of rolling resistance for both bicycles is 0.01. (1) Who gets to the top first? (2) How much longer does it take the loser to make it to the top?

(1) The winner is _____

(2) The winner's margin of victory is:

_____ hours _____ minute _____ seconds

(You can check Page 363 of the Textbook for unit conversion, if needed.)