

ENAE 788X FALL 2020 PROBLEM SET 1

DUE 10/12/20

While NASA was developing the Lunar Roving Vehicle, they wanted to mitigate the risk that the LRV would not be available on time, or would not work well on the moon. They started a small project to develop a lunar motorcycle (shown in the attached photo) which could carry one astronaut.

Assume that the astronaut has a mass of 170 kg, and the motorcycle has a mass of 30 kg. Using the parameters for lunar soil from the lectures, perform a trade study to select wheel diameters and widths that will produce a positive drawbar pull while climbing a 15° slope. You need not include the effects of tandem wheels, but you should state your assumption about the weight distribution between the wheels.

