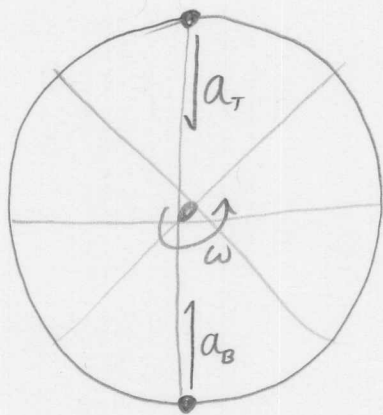


Force Problems

1 20 pts) You are traveling in Paris over summer break where you are telling a friend about the fascinating things you learned in Physics 111. Your friend doesn't believe that you can predict your apparent weight at the bottom of a rotating ferris wheel by making a single measurement at the top. He believes you must also know the angular velocity and radius of the wheel. You perform a quick derivation, grab a spring scale, and hop on the ferris wheel to prove that you have mad physics skills.



Derive an expression for your apparent weight at the bottom of the rotating wheel, W_B , in terms of your actual weight, W , and your apparent weight at the top of the wheel W_T .



$$a_B = -a_T$$

Bottom



$$N_B - W = ma_B$$

Top



$$N_T - W = ma_T$$

Replace a_B with $-a_T$ and add

$$N_B - W + N_T - W = -ma_T + ma_T$$

$$N_B + N_T - 2W = 0$$

$$\boxed{N_B = 2W - N_T}$$