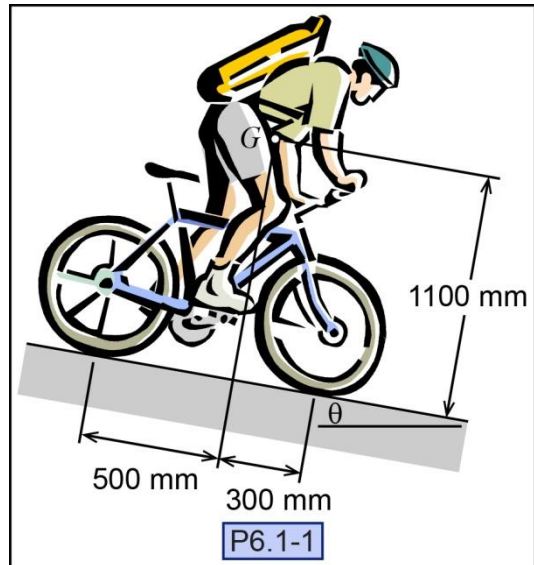**P6.1-1)^{fe}** A bicyclist is riding his bike down a 10-percent grade. He realizes that his speed has reached an unsafe level so he applies the front brakes. Determine the maximum deceleration that the biker can attain without tipping over his front wheel. The location of the combined center of mass is shown in the figure.
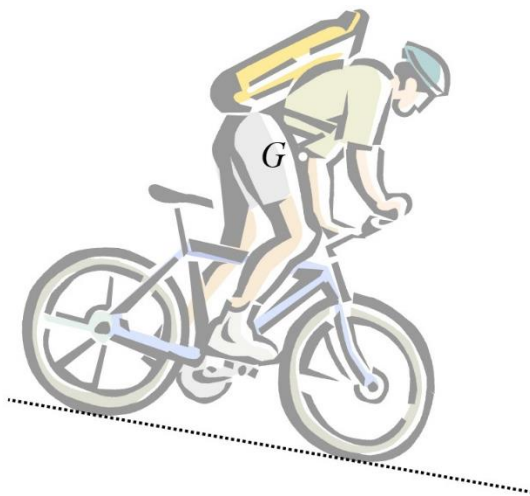
Given:

P6.1-1

Find:

Solution:

Free-body diagram

Draw a free-body diagram of the bike and rider.

When the bike begins to tip about the front wheel, which forces in your FBD go to zero?

Equation of Motion

Write down the bike/rider equation of motion in variable form.

Eq.M: _____

Solve for the acceleration.

$a = 1.69$ m/s^2