Name _____ Physics

Later Mater! The Turning Car Problem

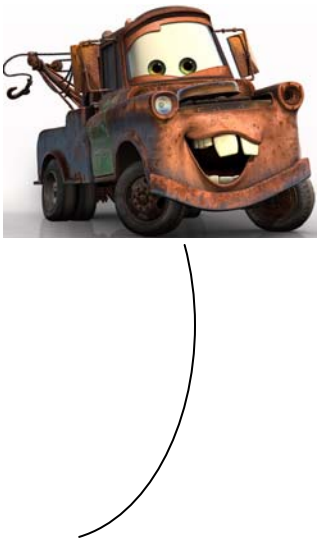
Mater is taking a turn heading to a crash-site to pick up a car. He angles his wheels in the turn to make an 80 m turning radius and is traveling 20 m/s.

1.) What is the cause of the centripetal force keeping him in the turn?

2.) Sketch tangential velocity, acceleration and force vectors in the diagram

3.) If mater has a mass of 1600 Kg, determine:

   a. The centripetal force keeping him in the turn
   b. The centripetal acceleration he experiences
   c. What is the coefficient of friction that would be required to keep mater on the road?
   d. What if the road was bank 10° from the horizontal, what centripetal force would now be required to keep mater in the turn?
   e. If Mater were heavier, how would this affect his ability to stay in the turn.



a) b) c) d)

e) f)