

PHY121 Summer 2018

Pre-work for Thursday 5/24

1. Draw free-body diagrams for each of the following situations:
 - (a) A car turning on level ground.
 - (b) A model airplane on the end of a string, flying in a horizontal circle.
 - (c) A roller coaster at the top of a vertical loop. (The cars are upside down!)
 - (d) A car rounding a banked curve.
 - (e) A pendulum released from a 60° angle at the following points:
 - i. Just after release.
 - ii. Halfway to the bottom.
 - iii. The bottom of the path.
 - iv. The point where it has zero velocity on the other side.
2. An object is spinning in uniform circular motion at the end of a string in the horizontal plane. If the tension in the string exceeds the maximum that it can bear, the string will break, sending the object flying in a certain direction. Draw the path that the object will travel once the string breaks. Explain why it must take this path and not any other.