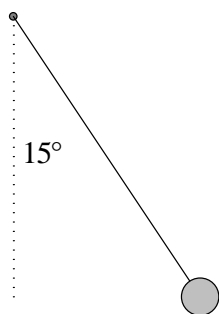Name: _____

If any question is unclear, *please* ask immediately. Be sure to show your work **clearly** and **draw a box around your answer**. Partial credit may be given for work *if* it can be understood.

If you get stuck on the **math** at any point, be sure to indicate clearly the **physics** you are using and how you would continue if you could do the math.

1. (20 pts.) You are riding in a friend's car going around a curve on level ground. The car is traveling at a constant speed of 20 m/s. You happen to notice that the fuzzy dice hanging from the mirror make a 15° angle away from the vertical. What is the radius of the curve?

15°

Name: _____SOLUTIONS_____

Code Name: (if you want your grades posted): _____

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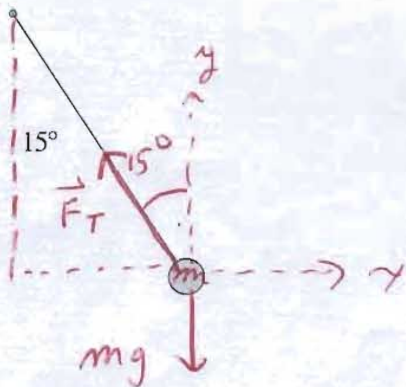
$$\Sigma F_y = ma_y$$

$$F_T \cos 15° - mg = 0$$

$$F_T = mg/\cos 15°$$

$$\Sigma F_x = ma_x$$

$$-F_T \sin 15° = \frac{-mv^2}{R}$$

$$mg \tan 15° = mv^2/R$$

$$R = \frac{v^2}{g \tan 15°}$$

$$\boxed{R = 152 \, m}$$