Plenary Questions on Circular Motion

1. A motorway interchange includes a smooth bend of radius 23 m. At what angle must it be banked so that a car can take the bend in an unpowered state at 20 ms^{-1}?

2. A pilot in a stunt plane loops the loop in a vertical circle of radius 0.6 km at a constant speed of 250 km/hour. If the pilot has a mass of 75 kg calculate:

   (a) the maximum resultant force on the pilot;
   (b) the minimum resultant force on the pilot stating where in the loop each occurs.