

# 1 Curvature for any curve

**Definition 1** (What is curvature). *A curvature is the amount by which a curve deviates from a straight line. Or in simply term, a curve is how far apart from a straight line.*

## 1.1 What is the curvature of table, soccer and horse saddle

## 1.2 Curvature in real life

Drive your car in a **straight road** or in a **curve road**.

**Definition 2 (Osculating Circle).** *What is Osculating Circle? Osculating Circle is the maximum circle which is just touch one point on the curve.*

# 2 Find intersection of **circle** and **parabola**

Circle Equation

$$x^2 + (y - r)^2 = r^2 \tag{1}$$

