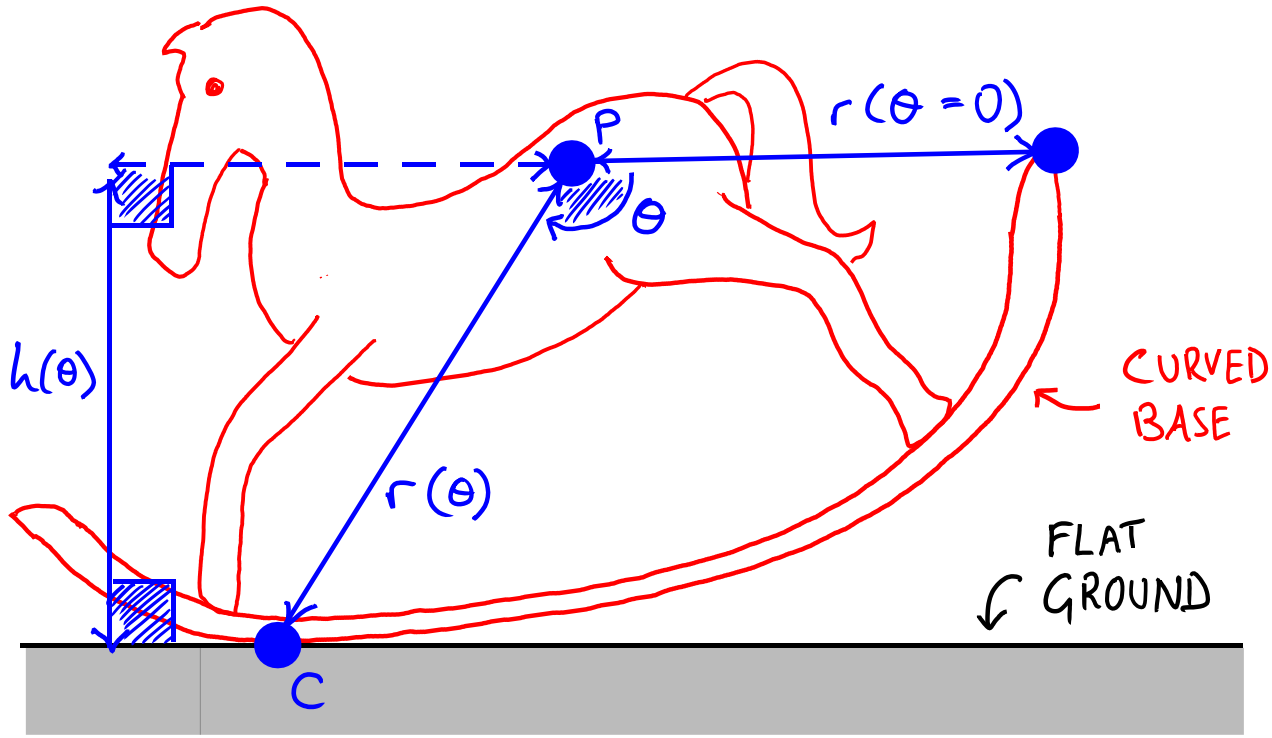
Rocking-horse



- The rocking-horse rolls without slipping on a flat surface. The curved base has point of contact C with the ground and is defined as having a given radius $r(\theta)$ from a fixed point P in the horse, and P is at a height $h(\theta)$ above the ground. Show that

$$h(\theta)^2 = \frac{r^2}{1 + r'(\theta)^2/r^2}. \tag{1}$$