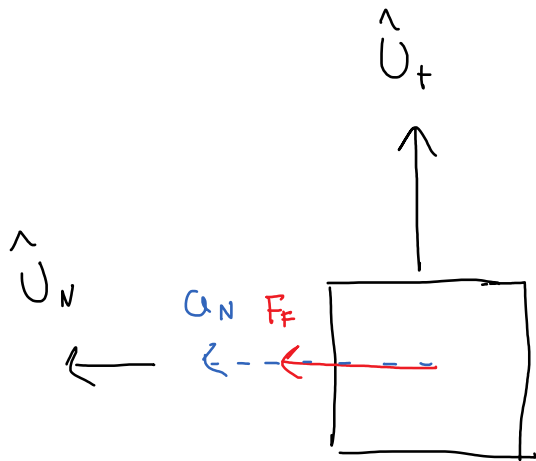# Problem 3

15 kg boxes are being transported around a curve via a conveyor belt as shown to the right. Assuming the curve has a radius of 3 meters and the boxes are traveling at a constant speed of 1 meter per second, what is the minimum required coefficient of friction needed to ensure the boxes don't slip as they travel around the curve?

$$\hat{U}_t$$

$$\hat{U}_N$$

a_N F_F

$$\sum F_z = F_g - F_N = 0$$

$$F_g = F_N = 147.15 \text{ N}$$

$$\sum F_N = F_F = m\,a_N$$

$$(M_s)(147.15) = (15)\left(\frac{1\,m/s^2}{3\,m}\right)$$

$$\boxed{M_s = .034}$$