

$$v^2 = \mu \left(\frac{a}{x} - 1 \right)$$

$$\Rightarrow 2v \frac{dv}{dx} = -\mu \frac{a}{x^2}$$

$$\Rightarrow a = v \frac{dv}{dx} = -\frac{\mu a}{2x^2}$$

$\therefore F(x) \propto -\frac{1}{x^2} \Rightarrow$ Towards the fixed point.