Physics 5A, Fall 2017
Homework Set 10

APF Ch 3: 3.2, 3.3, 3.6, 3.9, 3.19

KK Ch 4: 4.7, Ch5: 5.9, Ch 7: 7.17

S 10.1 Consider a particle vibrating in two dimensions with

$$\begin{aligned} x(t) &= \cos(\omega t), \\ y(t) &= \cos(\omega t + \phi). \end{aligned} \tag{1}$$

Show that the trajectory of this path traces out the following curve:

$$0 = \left(2x^2 - 1 - y\right)^2 - 2(1 - \cos\phi)(2x^2 - 1)y - \sin^2\phi. \tag{2}$$