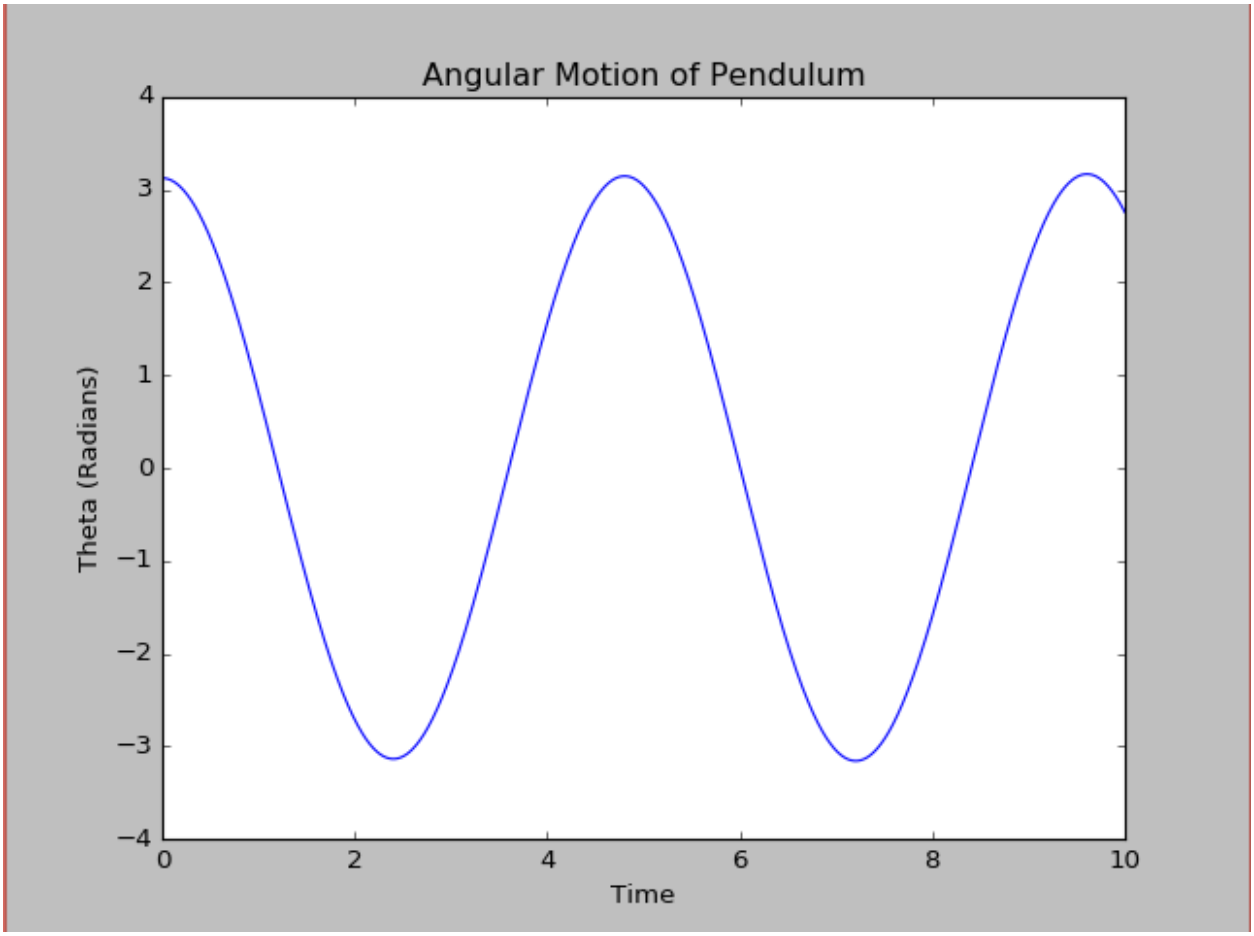
Problem 3:



The above is the depiction of the pendulum's motion.

```
#part b, attempted to create animation, but failed to get it running.

# import numpy as np
# from matplotlib import pyplot as plt
# from matplotlib import animation
#
# # First set up the figure, the axis, and the plot element we want to animate
# fig = plt.figure()
# ax = plt.axes(xlim=(0, 2), ylim=(-2, 2))
# line, = ax.plot([], [], lw=2)
#
# # initialization function: plot the background of each frame
# def init():
#     line.set_data([], [])
#     return line,
#
# # animation function.  This is called sequentially
# def animate(i):
#     x = linspace(0,10,1001)
#     y = -(g/l)*sin(x)
#     line.set_data(x, y)
#     return line,
#
# # call the animator.  blit=True means only re-draw the parts that have changed.
# anim = animation.FuncAnimation(fig, animate, init_func=init,
#                                frames=200, interval=20, blit=True)
#
# # save the animation as an mp4.  This requires ffmpeg or mencoder to be
# # installed.  The extra_args ensure that the x264 codec is used, so that
# # the video can be embedded in html5.  You may need to adjust this for
# # your system: for more information, see
# # http://matplotlib.sourceforge.net/api/animation_api.html
# #anim.save('basic_animation.mp4', fps=30, extra_args=['-vcodec', 'libx264'])
#
# plt.show()
```

This is an incomplete attempt to make an animation for the pendulum.