Python-Exercises
Matplotlib

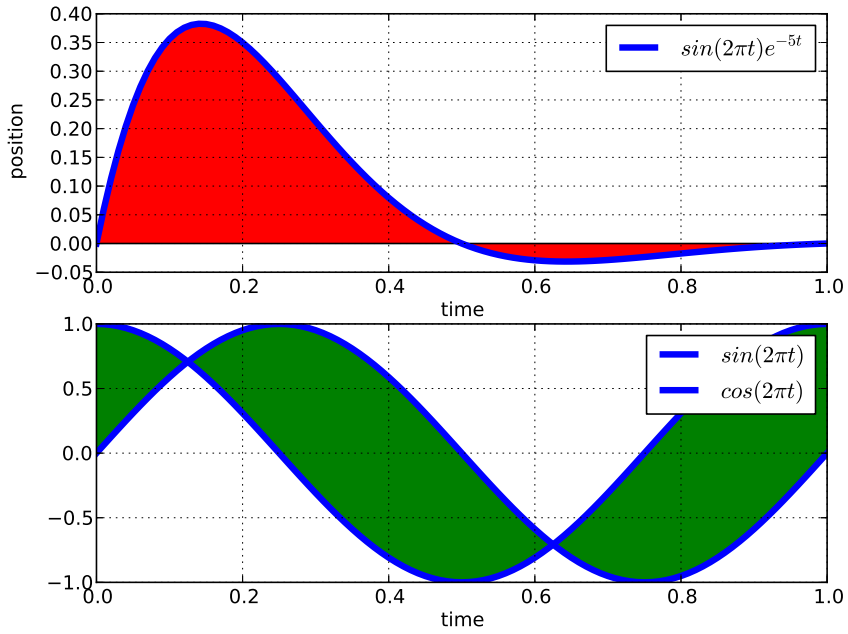
June 30, 2014

1 Plotting

1. Plot a simple graph of the sine function in the range 0 to 3 with a step size of 0.01.
2. Make the line red. Add diamond-shaped markers with size of 5.
3. Add a legend and a grid to the plot.

   Helpful functions: `pylab.grid`, `pylab.plot`, `pylab.legend`

2 Plotting II



1. Try to recreate the plot above.

   Helpful functions: `pylab.grid`, `pylab.plot`, `pylab.legend`, `pylab.fill`, `pylab.fill_between`

3 Animation

1. Try to recreate the animation played by the tutor. Use the simple animation approach, i.e. create a plot and for each new frame, update the plot using `pylab.draw`.

   Helpful functions: `pylab.draw`, `Line2D.set_ydata`, `time.sleep`

   Note: some python configurations may require that the following appears at the beginning of the script:

```
import matplotlib
matplotlib.use('GTK')
```

   Hint: $\sin\left(10x^{\frac{1+\sin(t)}{2}}\right)$

4 Animation II

1. Try to recreate the same animation played by the tutor. This time, use the explicit animation approach i.e. define an `update` function and pass this to `animation.FuncAnimation`.

   Helpful functions: `Line2D.set_ydata`, `animation.FuncAnimation`

   Note: some python configurations may require that the following appears at the beginning of the script:

```
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matplotlib.use('GTK')
```