Exercises

FOSSEE

Department of Aerospace Engineering
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Day 1, Session 5

Problem 1

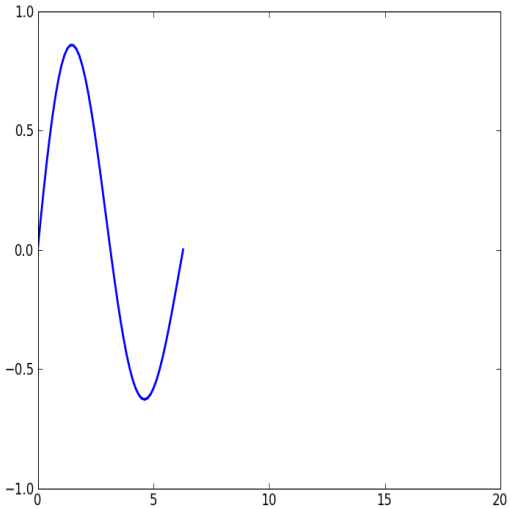
- Open file 'pos.txt', it has X and Y Coordinate of a particle under motion
- Plot X vs Y Graph.
- Label both the axes.
- What kind of motion is this?
- Title the graph accordingly.
- Annotate the position where vertical velocity is zero.

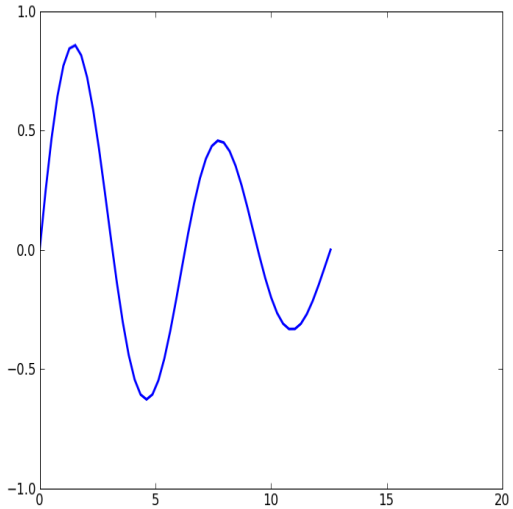
Problem 2

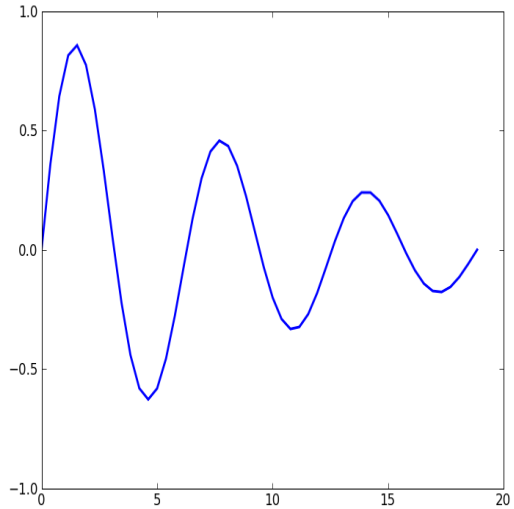
Write a Program that plots a regular n-gon(Let n = 5).

Problem 3

Create a sequence of images in which the damped oscillator($e^{x/10}sin(x)$) slowly evolves over time.







Hint

```
savefig('plot'+str(i)+'.png') #i is int variable
```

Problem 4

Legendre polynomials $P_n(x)$ are defined by the following recurrence relation

$$(n+1)P_{n+1}(x) - (2n+1)xP_n(x) + nP_{n-1}(x) = 0$$

with $P_0(x) = 1$, $P_1(x) = x$ and $P_2(x) = (3x^2 - 1)/2$. Compute the next three Legendre polynomials and plot all 6 over the interval [-1,1].