Group Member Names:

In [1]:
```
from sympy import *
from sympy.plotting import plot, plot_parametric
```

Lab 1 Template

Each part of each problem should be solved in its own cell.

Question 1

The height of a ball dropped at a starting height, s_0, and an initial velocity, v_0, is given by $s(t) = \frac{g}{2}t^2 + v_0t + s_0$ where g is the gravitational constant given by -32 ft/sec^2.

a.) Given an initial height of 400 ft. and an initial velocity of -16 ft/sec, what is the height of the ball after 4 seconds?

b.) Given an initial height of 10 ft. and an initial velocity of 400 ft/sec, what is the height of the ball after 25 seconds?

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Question 2

Given $f(x) = sin(e^x)$, find the slope of the line between the given points, A and B. Be sure to get a decimal approximation for the final answers using .evalf().

a.) $A = (0, f(0)), B = (1, f(1))$

b.) $A = (.2), f(.2), B = (.5, f(.5))$

c.) $A = (.451, f(.451)), B = (\ln(\frac{\pi}{2}), f(\ln(\frac{\pi}{2}))$

d.) What number do these answers appear to be getting closer and closer to? Put your answer in a print statement.

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Question 3

Given vectors $p = \langle 4, -2 \rangle$ and $q = \langle -1, 3 \rangle$: (once again be sure to give decimal answers)

a.) Find $p \cdot q$.

b.) Find the $|p|$ and $|q|$.

c.) Find the angle between p and q in radians.

In [ ]:

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