1. Predicting the cost of a house could be a regression problem in Machine Learning:
a) Amount of Land would be X

b) Quality of Life would be Y (General condition of the house)

c) Data would be collected by the sold prices on houses in randomized locations

d) This could be challenging when looking at geographical regions and the varying

2. Predicting how long a car can go before needing gas

a) Distance Traveled

b) Out of Gas

c) Data would be collected by seeing how many miles a car gets off a full tank

d) Taking different brands of cars into account could skew data

3.

c) Both seem to match their respective intended outcome, with the first graph having a bell shaped curve indicating a gaussian distribution, and the second having no curve indicating normal distribution.

d) Elapsed time is 0.024790 seconds.

e) .0016s

f) the first run had 624867 elements, and the second had 625061 elements, this is due that the random numbers are recalculated each time a new run has started, so the number of elements will differ depending on the run.

4.

b) [.3, .4, 0] = x

c) [.5, 0, -1.5]

L1: |.5| + |0| + |-1.5| = 2

L2: sqrt(.5^2 + 0^2 + 1.5^2) = sqrt(.25 + 0 + 2.25) = 1.5811

[1, -1, 0];

L1: |1| + |-1| + |0| = 2

L2: sqrt(1^2 +1^2 + 0^2) = 1.4142

5.

```
normalize_Col([2 1 3; 2 6 8; 6 8 18]);
```

-0.5774 -1.1094 -0.8729

-0.5774 0.2774 -0.2182

1.1547 0.8321 1.0911

```
normalize_Col([2 1 3 4; 2 6 8 12; 6 8 18 34]);
```

-0.5774 -1.1094 -0.8729 -0.8154

-0.5774 0.2774 -0.2182 -0.3004

1.1547 0.8321 1.0911 1.1158