B2

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#B2

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

try_X=np.arange(20,40.01,step=0.01)
exp_profits = list()

for X in try_X:
    MC_N=10000
    D = np.random.uniform(20,40,size=MC_N)

    sales_rev=2*np.minimum(D,X)
    salvage_rev=0.5*np.maximum(X-D,0)
    material_cost=1*X

    exp_profit=np.mean(sales_rev + salvage_rev - material_cost)
    exp_profits.append(exp_profit)

try_X = try_X.reshape(-1,1)
exp_profits = np.asarray(exp_profits).reshape(-1,1)
result = pd.DataFrame(np.concatenate((try_X,exp_profits),axis=1), columns=['try_X','exp_profit'])

result.head()
```
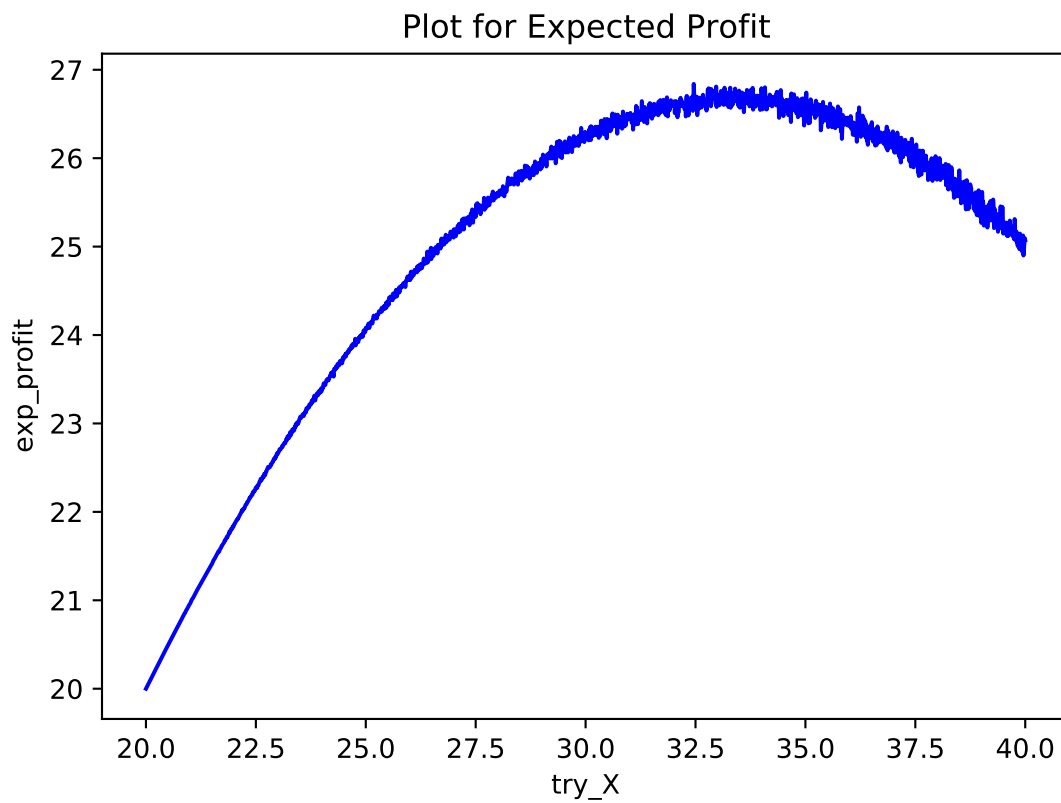
```
##     try_X  exp_profit
## 0  20.00   20.000000
## 1  20.01   20.009992
## 2  20.02   20.019977
## 3  20.03   20.029974
## 4  20.04   20.039961
```

```python
plt.plot(try_X,exp_profits,color='blue')
plt.title('Plot for Expected Profit')
plt.xlabel('try_X')
plt.ylabel('exp_profit')
plt.show()
```

Plot for Expected Profit

```
idx=np.argmax(exp_profits)
print(try_X[idx])
```

[32.46]

```
print(exp_profits[idx])
```

[26.83996251]