Additional_Exercise_25-11-2025

November 25, 2025

[22]:
```
%%time
%matplotlib inline

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

from linreg import LinearModel
```

```
CPU times: user 307 µs, sys: 119 µs, total: 426 µs
Wall time: 435 µs
```

[23]:
```
#Explicitly specified the xlrd engine
df = pd.read_excel('chirps.xls', engine='xlrd')
df.head()
```

```
*** No CODEPAGE record, no encoding_override: will use 'iso-8859-1'
```

[23]:

	X	Y
0	20.000000	88.599998
1	16.000000	71.599998
2	19.799999	93.300003
3	18.400000	84.300003
4	17.100000	80.599998

[24]:
```
x = df.X.values
y = df.Y.values
x = np.reshape(x, (x.shape[0], 1))
y = np.reshape(y, (y.shape[0], 1))
```

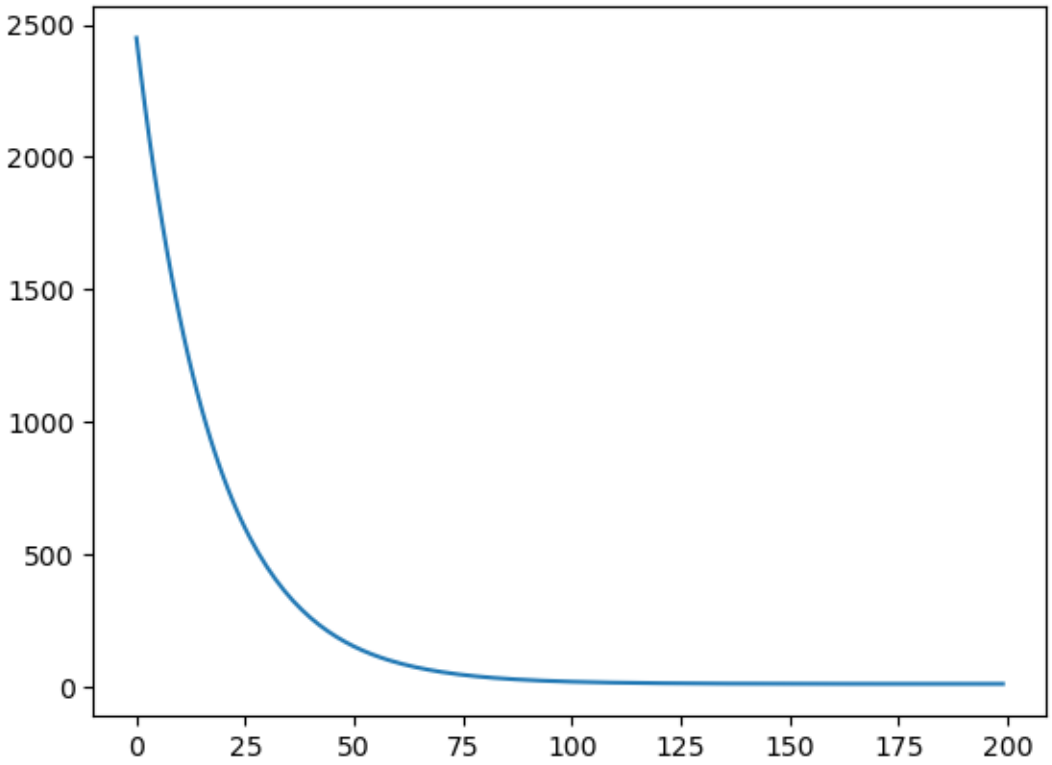
[25]:
```
model = LinearModel(1)

losses = model.train(
    x, y,
    200, 0.0001
)
```

```
Iter: 0, Current loss: 2450.4801
```

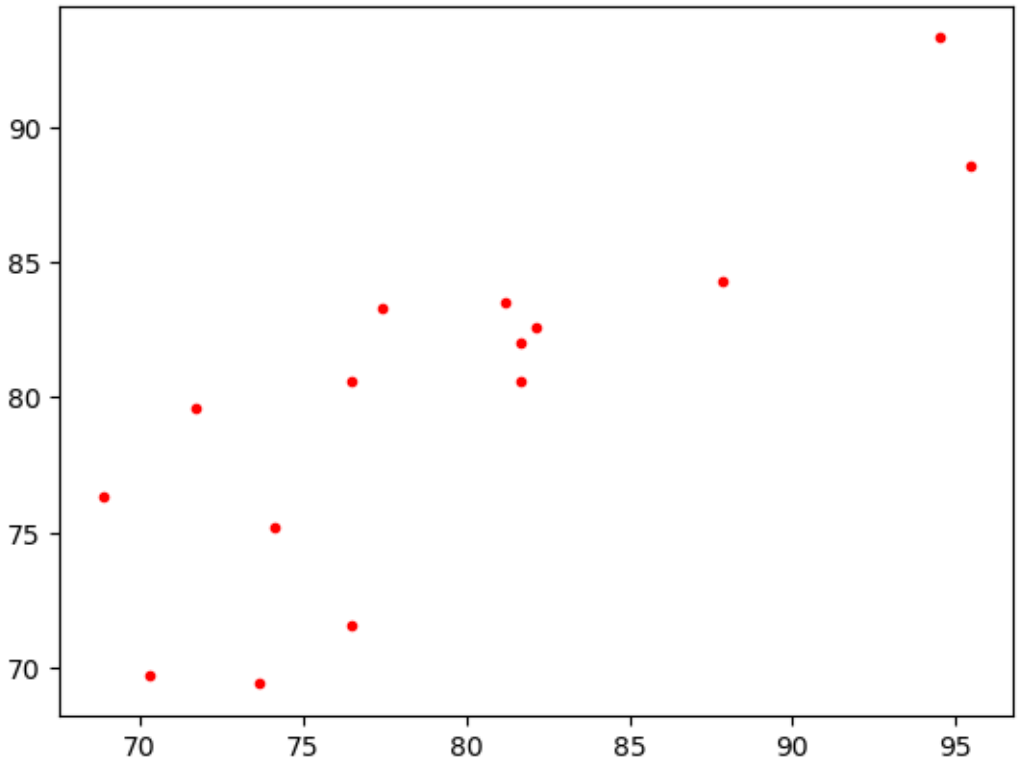
```
Iter: 20, Current loss: 789.8767
Iter: 40, Current loss: 258.8948
Iter: 60, Current loss: 89.1120
Iter: 80, Current loss: 34.8234
Iter: 100, Current loss: 17.4645
Iter: 120, Current loss: 11.9138
Iter: 140, Current loss: 10.1389
Iter: 160, Current loss: 9.5713
Iter: 180, Current loss: 9.3897
```

[26]:
```
plt.plot(losses);
```



[27]:
```
y_preds = model.forward_pass(x)
```

[28]:
```
plt.plot(y_preds, y, 'r.');
```



[29]:
```
print(model.W, model.b)
```

```
[[4.74796892]] 0.5001160580421288
```

0.0.1 $y = 4.75 * x + 0.5$

- This is the relationship that exists between **x (Number of chirps in a minute)** and **y (Ambient temperature of the room)**, based on the 15 examples in the given dataset.