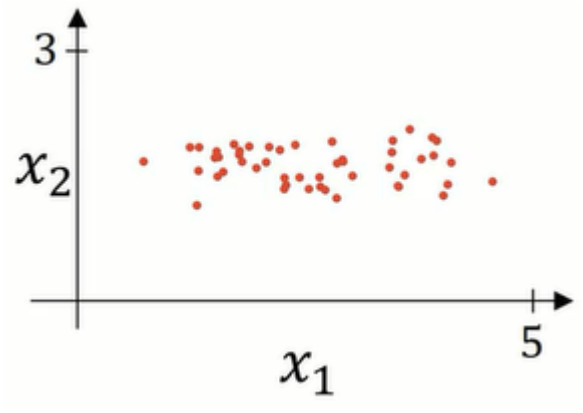
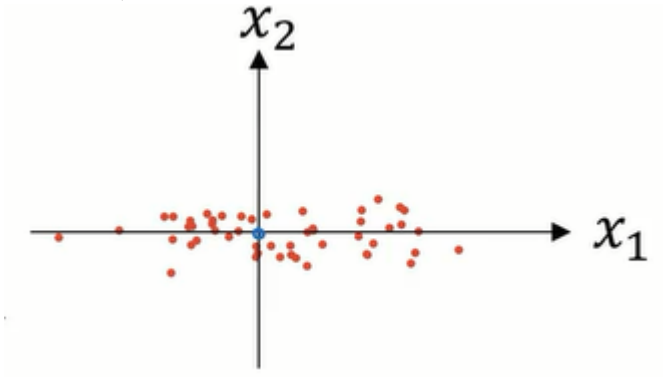
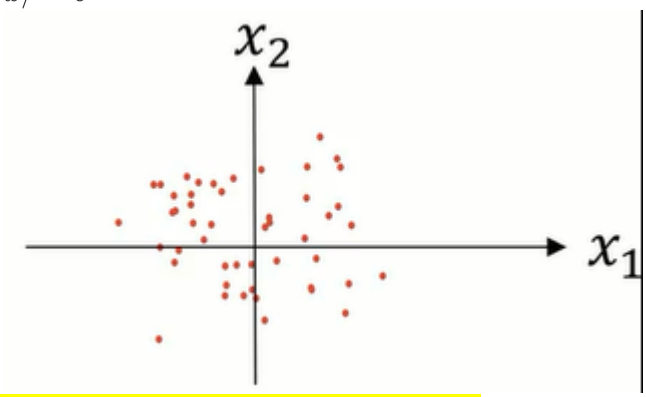
Normalizing training set

- 

- *Subtract mean* :
  - $\mu = \frac{1}{m}\sum_{i=1}^{m} x^{(i)}$
  - $x := x - \mu$
  - 

- *Normalize variance* :
  - $\sigma^2 = \frac{1}{m}\sum_{i=1}^{m} x^{(i)} \underbrace{**}_{elementwise\ power} 2$
  - $x/ = \sigma^2$
  - 

- **use the same μ and σ^2 to test and dev set**
  - want the data in dev and test set go through the same transformation

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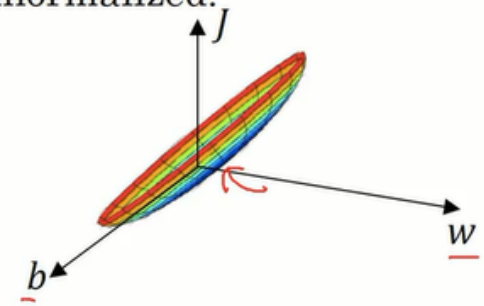
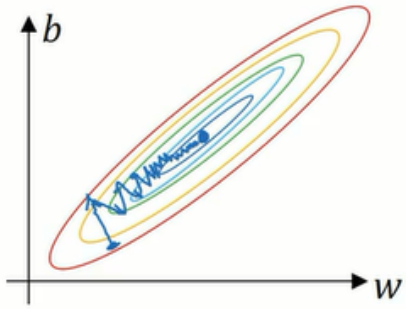
Why normalize inputs?

Unnormalized:





Normalized: