

Environment Setup Instructions

Multivariate Linear Regression

- ✓ **Video:** Multiple Features
8 min
- ✓ **Reading:** Multiple Features
3 min
- ✓ **Video:** Gradient Descent for Multiple Variables
5 min
- ✓ **Reading:** Gradient Descent For Multiple Variables
2 min
- ✓ **Video:** Gradient Descent in Practice I - Feature Scaling
8 min
- ✓ **Reading:** Gradient Descent in Practice I - Feature Scaling
3 min
- ✓ **Video:** Gradient Descent in Practice II - Learning Rate
8 min
- ✓ **Reading:** Gradient Descent in Practice II - Learning Rate
4 min
- ✓ **Video:** Features and Polynomial Regression
7 min
- ✓ **Reading:** Features and Polynomial Regression
3 min

Computing Parameters Analytically

Submitting Programming Assignments

Review

Octave/Matlab Tutorial

Review



Gradient Descent For Multiple Variables

Gradient Descent for Multiple Variables

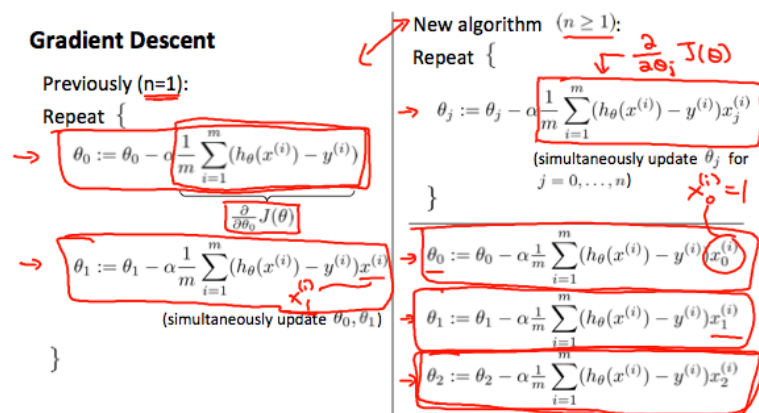
The gradient descent equation itself is generally the same form; we just have to repeat it for our 'n' features:

```
repeat until convergence: {
   $\theta_0 := \theta_0 - \alpha \frac{1}{m} \sum_{i=1}^m (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_0^{(i)}$ 
   $\theta_1 := \theta_1 - \alpha \frac{1}{m} \sum_{i=1}^m (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_1^{(i)}$ 
   $\theta_2 := \theta_2 - \alpha \frac{1}{m} \sum_{i=1}^m (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_2^{(i)}$ 
  ...
}
```

In other words:

```
repeat until convergence: {
   $\theta_j := \theta_j - \alpha \frac{1}{m} \sum_{i=1}^m (h_{\theta}(x^{(i)}) - y^{(i)}) \cdot x_j^{(i)}$  for j := 0...n
}
```

The following image compares gradient descent with one variable to gradient descent with multiple variables:



✓ Complete

Go to next item