EEE 443 — Tutorial 3
PDF of Codes

Code Cell-2:

```
J = x * theta
```

Code Cell-4:

```
dtheta = x
```

Code Cell-6:

```
theta_plus = theta + epsilon
theta_minus = theta - epsilon
J_plus = (x * theta_plus)
J_minus = (x * theta_minus)
gradapprox = (J_plus - J_minus) / (2 * epsilon)

grad = backward_propagation(x, theta)

numerator = np.linalg.norm( grad - gradapprox)
denominator = np.linalg.norm(grad) + np.linalg.norm(gradapprox)
difference = numerator / denominator
```

Code Cell-10:

```
    theta_plus = np.copy(parameters_values)
    theta_plus[i] += epsilon
    J_plus[i], _ = forward_propagation_n(X, Y, vector_to_dictionary(theta_plus))

    theta_minus = np.copy(parameters_values)
    theta_minus[i] -= epsilon
    J_minus[i], _ = forward_propagation_n(X, Y, vector_to_dictionary(theta_minus))

    gradapprox = (J_plus - J_minus) / (2 * epsilon)

nominator = np.linalg.norm(grad - gradapprox)
denominator = np.linalg.norm(grad) + np.linalg.norm(gradapprox)
difference = nominator / denominator
```