

Unit 6 - Week 3

Assignment 3

The due date for submitting this assignment has passed. **Due on 2019-08-21, 23:59 IST.**
As per our records you have not submitted this assignment.

Consider the function $J(w) = w_1^2 + w_2^2 - 6w_1 + 8w_2 - 9$. Answer questions (1-6):

1) The theoretical value of $\min(J(w))$ is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) -34

1 point

2) The theoretical value of the first component of $\operatorname{argmin}_w(J(w))$ is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 3

1 point

3) The theoretical value of the second component of $\operatorname{argmin}_w(J(w))$ is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) -4

1 point

4) Start with the initial guess of $[w_1, w_2] = [5, 5]$. Take the value of learning rate = 0.3. The value of w_1 after 4 iterations of gradient descent will be _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 3.0,3.1

1 point

5) Start with the initial guess of $[w_1, w_2] = [5, 5]$. Take the value of learning rate = 0.3. The value of w_2 after 4 iterations of gradient descent will be _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) -3.8,-3.7

1 point

6) The absolute value of the difference between the values of J after the 4th and 3rd iterations is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.29,0.3

1 point

Based on the data provided below, answer questions from (7-10). We consider a function we wish to minimize.

$J(w) = \frac{1}{10} \sum_i^5 (y^{(i)} - w_1 x^{(i)} - w_0)^2$ where the constants $x^{(i)}, y^{(i)}$ are provided in the table below

i	$x^{(i)}$	$y^{(i)}$
1	0	1.4822
2	0.25	1.8165
3	0.50	1.9171
4	0.75	2.3930
5	1.00	2.5826

Dataset

7) The dimension of w is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 2

1 point

8) Start with the initial guess of $[w_0, w_1] = [0, 0]$. Take the value of learning rate = 1. The value of w_0 after 4 iterations of gradient descent will be _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1.55,1.56

1 point

9) Start with the initial guess of $[w_0, w_1] = [0, 0]$. Take the value of learning rate = 1. The value of w_1 after 4 iterations of gradient descent will be _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.95,0.96

1 point

10) Start with the initial guess of $[w_0, w_1] = [0, 0]$. Take the value of learning rate = 1. The value of J after 4 iterations of gradient descent will be _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 0.003,0.004

1 point

Course outline

How to access the portal?

Prerequisites Assignment

Matlab and Learning Modules

Week 1

Week 2

Week 3

 Machine Representation of Numbers, Overflow, Underflow, Condition Number

 Derivatives, Gradient, Hessian, Jacobian Series

 Matrix Calculus (Slightly Advanced)

 Optimization – 1 Unconstrained Optimization

 Introduction to Constrained Optimization

 Introduction to Numerical Optimization Gradient Descent - 1

 Gradient Descent – 2 Proof of Steepest Descent Numerical Gradient Calculation Stopping Criteria

 Introduction to Packages

 Quiz : Assignment 3

 Assignment 3 solutions

 Week 3 feedback: Machine Learning for Engineering and Science Applications

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

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