✓ **Congratulations! You passed!**
TO PASS 80% or higher

Keep Learning

GRADE
100%

Regression Basics

TOTAL POINTS 6

1. What is a loss function? **1 / 1 point**

- (•) It is a way of mathematically measuring the errors made by a specific hypothesis.
- ( ) A function that decreases in value every time a mistake is made.
- ( ) It is a way of mathematically measuring the number and magnitude of the correct predictions made by a specific hypothesis.
- ( ) A function that quantifies financial loss.
- ( ) It is a way of mathematically measuring the number and magnitude of the errors made by a specific hypothesis.
- ( ) It is a way of mathematically measuring the number and magnitude of the errors made by the best hypothesis.

✓ **Correct**
Correct! Loss functions provide a precise way of quantifying the mistakes made by any given hypothesis.

2. How might a learning algorithm find a **best** line? **1 / 1 point**

- [ ] Trial and error
- [x] Use an iterative method like gradient descent.

✓ **Correct**
Correct, iterative methods find the best line in the case of convex optimization, and gradient descent can be used if the function is differentiable.

- [ ] Plot all possible lines and pick the one that looks best.
- [x] Set the derivative of the loss function equal to zero and solve.

✓ **Correct**
Correct, at least when the optimization is differentiable and convex.

- [ ] Brute force search

3. Why is the convexity of the loss function important for machine learning? **1 / 1 point**

- (•) Because in convex optimization a local minimum is guaranteed to be the global minimum.
- ( ) Because convexity guarantees the smoothness of our loss function.
- ( ) Because we like lines and lines are convex.
- ( ) Because in convex optimization a global minimum is guaranteed to be a local minimum.

✓ **Correct**
Correct, convexity guarantees that the minimum value is the global minimum.

4. Why is gradient descent considered an iterative approach? **1 / 1 point**

- ( ) Because we're using step-wise updates to converge to a maximum.
- (•) Because we're using step-wise updates to converge on a minimum.
- ( ) Because we're using continuous updates to converge to a maximum.
- ( ) Because we're using continuous updates to converge to a minimum.

✓ **Correct**
Correct! Gradient Descent takes "steps" by adjusting the parameters against the direction of the gradient, in order to find the parameters that result in the minimum loss.

5. What is the hypothesis space of linear regression? **1 / 1 point**

- [ ] The best-fit line
- [ ] All hypothesis that give numbers instead of classes.
- [ ] The set of curved lines.
- [x] The set of straight lines.

✓ **Correct**
Correct, by default linear regression in two dimensions considers all possible straight lines.

- [x] The set of flat hyperplanes

✓ **Correct**
Correct, in general linear regression considers all possible flat planes in the appropriate dimensionality.

6. In a two-dimensional graph, what line has a slope of zero? **1 / 1 point**

- (•) A horizontal line
- ( ) A line that goes up and to the right
- ( ) A vertical line

✓ **Correct**
Correct! The slope of a horizontal line is always 0.