1. Assume that your objective is to minimize the transformation of X as similar to Y as possible, what would you optimize to get R? $(XR \approx Y)$ **1 / 1 point**

- (●) Minimize the distance between XR and Y
- ( ) Maximize the distance between XR and Y
- ( ) Minimize the dot product between XR and Y
- ( ) Maximize the dot product between XR and Y

Correct
This is correct.

2. When solving for R, which of the following is true? **1 / 1 point**

- ○ Create a forloop, inside the forloop: (initialize R, compute the gradient, update the loss
- ○ Create a forloop, inside the forloop: (initialize R, update the loss, compute the gradient.
- ◉ Initialize R, create a forloop, inside the forloop: (compute the gradient, update the loss)
- ○ Initialize R, compute the gradient, create a forloop, inside the forloop: (update the loss)

Correct
This is correct.

3. The Frobenius norm of A = $\begin{pmatrix} 1 & 3 \\ 4 & 5 \end{pmatrix}$ is

1 / 1 point

(Answer should be in 2 decimal places)

7.14

Correct

7.14

4. Assume $X \in R^{m \times n}, R \in R^{n \times n}, Y \in R^{m \times n}$ which of the following is the gradient of $\|XR - Y\|_F^2$? **1 / 1 point**

- (●) $\frac{2}{m} X^T (XR - Y)$
- ( ) $\frac{2}{m} X (XR - Y)$
- ( ) $\frac{2}{m} (XR - Y) X$
- ( ) $\frac{2}{m} (XR - Y) X^T$

Correct
This is correct.

5. Imagine that you are visiting a city in the US. If you search for friends that are living in the US, would you be able to determine the 2 closest of ALL your friends around the world?

1 / 1 point

- ○ Yes, because I am already in the country and that implies that my closest friends are also going to be in the same country.
- ◉ No

Correct
This is correct.

7. Given the following vectors, determine the true statements. **1 / 1 point**

P: $\begin{bmatrix}1\\1\end{bmatrix}$

V_1: $\begin{bmatrix}1\\1\end{bmatrix}$

V_2: $\begin{bmatrix}2\\2\end{bmatrix}$

V_3: $\begin{bmatrix}-1\\-1\end{bmatrix}$

- (●) PV_1^T and PV_2^T have the same sign.
- ( ) PV_1^T and PV_2^T are equal in magnitude.
- ( ) PV_1^T and PV_3^T have the same sign.

Correct
Correct

8. We define H to be the number of planes and h_i to be 1 or 0 depending on the sign of the dot product with plane i. Which of the following is the equation used to calculate the hash for several planes.

1 / 1 point

- (●) $\sum_i^H 2^i h_i$
- ( ) $\sum_i^H 2^i h_i^i$
- ( ) $\sum_i^H 2ih_i$
- ( ) $\sum_i^H 2^{h_i} i$

Correct
Correct.

6. What is the purpose of using a function to hash vectors into values? **1 / 1 point**

- [x] To speed up the time it takes when comparing similar vectors.

  Correct
  This is correct.

- [x] To not have to spend time comparing vectors with other vectors that are completely different.

  Correct
  This is correct.

- [ ] To make the search for other similar vectors more accurate.

- [ ] It helps us create vectors.

9. How can you speed up the look up for similar documents. **1 / 1 point**

- [ ] PCA
- [x] Approximate Nearest Neighbors

Correct
This is correct.

- [ ] K-Means
- [x] Locality sensitive hashing

Correct
This is correct.

10. Hash tables are useful because

1 / 1 point

- [x] allow us to divide vector space to regions.

Correct
This is correct.

- [x] speed up look up

Correct
This is correct.

- [ ] classify with higher accuracy

- [x] can always be reproduced

Correct
You will always hash the same vector to the same bucket with the same hash function.