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

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

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.

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

1 / 1 point

☑ To speed up the time it takes when comparing similar vectors.

✓ **Correct**

This is correct.

☑ 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.

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.

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

⦿ $\sum_i^H 2^i h_i$

○ $\sum_i^H 2^i h_i^i$

○ $\sum_i^H 2i h_i$

○ $\sum_i^H 2^{h_i} i$

9. How can you speed up the look up for similar documents.

1 / 1 point

☐ PCA

☑ Approximate Nearest Neighbors

☐ K-Means

☑ Locality sensitive hashing

10. Hash tables are useful because

1 / 1 point

☑ allow us to divide vector space to regions.

○ $\sum_i^H 2ih_i$

○ $\sum_i^H 2^{h_i}i$

9. How can you speed up the look up for similar documents.

1 / 1 point

☐ PCA

☑ Approximate Nearest Neighbors

☐ K-Means

☑ Locality sensitive hashing

10. Hash tables are useful because

1 / 1 point

☑ allow us to divide vector space to regions.

☑ speed up look up

☐ classify with higher accuracy

☑ can always be reproduced