Assignment 7

Due on 2021-05-10, 23:59 IST.

1. Singular value decomposition (SVD) is defined for:
   - Only square matrices
   - Only singular matrices
   - Only invertible matrices
   - Any matrix
   No. the answer is incorrect
   1 point

2. In the SVD of matrix $P$ given as $P = UXV^T$, $U$ is:
   - Only singular matrices
   - Only null matrices
   - Only invertible matrices
   - Any matrix
   No. the answer is incorrect
   1 point

3. Consider the matrix $Q$ given below:

$$
Q = \begin{bmatrix}
1 & 0 & 2 \\
0 & 1 & 0 \\
-1 & 0 & 2
\end{bmatrix}
$$

Compute singular values of $Q$. If $p$ is given as:

$$
\begin{align*}
\sigma_1 &= 2 \\
\sigma_2 &= 1 \\
\sigma_3 &= 1
\end{align*}
$$

No. the answer is incorrect

1 point

4. Optimal power allocation for a MIMO wireless system to maximize the total transmission rate can be obtained as:

- Determining algorithm
- Waterfilling algorithm
- Beam forming algorithm
- MIMO algorithm

No. the answer is incorrect

1 point

5. Consider the singular values of a MIMO channel matrix given as $\sigma_1 = 1$, $\sigma_2 = 2$, with full rank power $P = 2$ and block power $P = 2$. The $\frac{P}{\sigma}$ optimal power allocation to maximize the capacity of the MIMO channel is given as:

- $1.5$ W
- $1$ W
- $0.5$ W
- $2$ W

No. the answer is incorrect

1 point