Assignment 11

Due on 2020-04-15, 23:59 IST.

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) Which of the following is/are true:
   - A diagonal matrix is always similar to any matrix of the same order.
   - A diagonal matrix is always similar to any matrix of the same order and size.
   - A diagonal matrix is similar to any matrix.
   - A diagonal matrix is always similar to any matrix of the same size.

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   A diagonal matrix is always similar to any matrix of the same order.

2) Which of the following matrices is/are similar to the matrix \[
\begin{bmatrix}
-4 & 6 \\
1 & -3
\end{bmatrix}
\]?
   - \[
\begin{bmatrix}
-6 & 0 \\
0 & -1
\end{bmatrix}
\]
   - \[
\begin{bmatrix}
-1 & 0 \\
0 & -6
\end{bmatrix}
\]
   - \[
\begin{bmatrix}
0 & -6 \\
-1 & 0
\end{bmatrix}
\]
   - \[
\begin{bmatrix}
0 & -6 \\
-1 & 0
\end{bmatrix}
\]

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   \[
\begin{bmatrix}
0 & -6 \\
-1 & 0
\end{bmatrix}
\]

3) For the matrix \[
\begin{bmatrix}
1 & 0 \\
0 & -3
\end{bmatrix}
\]?
   - Origin is a zero
   - Origin is a saddle
   - Origin is a source
   - Origin is a degenerate sink

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   Origin is a saddle

4) Which of the following is/are true:
   - For a matrix of the form \[
\begin{bmatrix}
0 & 0 \\
0 & 0
\end{bmatrix}
\], origin is a saddle if \(0 < \lambda_1 < \lambda_2 < 1\).
   - For a matrix of the form \[
\begin{bmatrix}
0 & 0 \\
0 & 0
\end{bmatrix}
\], origin is a source if \(\lambda_1 > \lambda_2 > 1\).
   - For a matrix of the form \[
\begin{bmatrix}
0 & 0 \\
0 & 0
\end{bmatrix}
\], origin is a degenerate sink if \(|\lambda| > 1\).
   - For a matrix of the form \[
\begin{bmatrix}
0 & 0 \\
0 & 0
\end{bmatrix}
\], origin is a saddle if \(|\lambda| > 1\).

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   For a matrix of the form \[
\begin{bmatrix}
0 & 0 \\
0 & \lambda_2
\end{bmatrix}
\], origin is a source if \(\lambda_1 > \lambda_2 > 1\).

5) Consider the dynamical system \((T, T)\) as \((T_1, T_2) = \frac{(T \bmod 1)}{2}\).
   - \((T, T)\) is topologically transitive.
   - \((T, T)\) is Devaney Chaotic.
   - \((T, T)\) is not Devaney Chaotic.

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   \((T, T)\) is topologically transitive

6) Statement: A hyperbolic toral automorphism is a homeomorphism
   - The given statement is true
   - The given statement is not true

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   The given statement is true

7) Statement: A hyperbolic toral automorphism is Devaney Chaotic
   - The given statement is true
   - The given statement is not true

   1 point
   No, the answer is incorrect.
   Accepted Answer:
   The given statement is true