QUIZ November 11, 2013

1. The sequence

$$1, 1, 2, 3, 5, 8, \ldots$$

 is a solution of the difference equation

$$y_{k+2} + y_{k+1} + y_k = 0$$

2. The sequence $(a + 1)^k$, for $k = 0, 1, 2, 3. \ldots$, is a solution of the difference equation

$$y_{k+1} - y_k = ay_k$$

3. The mapping $T : \mathbb{S} \to \mathbb{S}$ given by

$$T(y_k) = a_0 y_{k+n} + a_1 y_{k+n-1} + \cdots + a_{n-1} y_{k+1} + a_n y_k$$

 is a linear transformation whose kernel is n dimensional.

4. A Casorati matrix is invertible if and only if the signals used for its columns are linearly independent.

5. Buckingham's Theorem states that any complete relationship among quantities can be algebraically manipulated to become

$$f(\Pi_1, \ldots, \Pi_n) = 0$$

where the Π_i are a complete set of dimensionless quantities.

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