On a problem connected with matrices over Z_3

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Abstract

In [2] (p. 476 - Unsolved Problems-TYCMJ 186 - by Stewart M. Venit) we can find the following problem:

For every natural number n show that there exist one and only one matrix A such that

(i) all entries of A are in the set Z_3,

(ii) the submatrix consisting of the first k rows and k columns of A has determinant equal to k for $k = 1, 2, ..., n$,

(iii) all entries of A are not on the main diagonal or not on the diagonals directly above or below are zero.

We took about a solution of this problem and the graphic interpretation of this matrices.

Keywords

Matrices over Z_3, Graphs.

References

[1] Grytczuk, A. (1999). On a problem connected with matrices over Z_3. *Acta Acad. Paedagog. Agriensis Sect. Mat. 26*, 9–12.

[2] Rabinowitz, S. (1992). *Index to Mathematical Problems 1980-1984*. Westford: MathPro Press.