[12] 1. True/False.   For each of the statements below, decide if it is TRUE or FALSE and CIRCLE the appropriate value. Correct answers earn 1 point, incorrect answers earn -1/2 point and blank answers are worth 0 points. You do not need to justify your answer.

True   False   The vectors $v_1 = (1; 2; 0; 2)$, $v_2 = (0; 1; 0; 1)$, and $v_3 = (3; 0; 3; 0)$ form an orthogonal set.

True   False   A linear system with more unknowns than equations is always inconsistent.

True   False   The product of two elementary matrices is an elementary matrix.

True   False   The vector $w = (2; 3; 2)$ can be expressed as a linear combination of the vectors $v_1 = (1; 0; 1)$ and $v_2 = (0; 1; 0)$.

True   False   If B is a nonsingular 2×2 matrix and $AB = 2I$, then $\det(A) = \dfrac{2}{\det(B)}$.

True   False   The eigenvalues of a matrix are the same as the eigenvalues of its reduced row echelon form.

True   False   The stochastic matrix $P = \begin{pmatrix} 1 & 0.2 & 0.1 \\ 0 & 0.8 & 0.2 \\ 0 & 0 & 0.7 \end{pmatrix}$ 5TJ/F15 11.9552 Tf 21.r [(nnw)-3d [(I)] 8 6855 11