

Homework 22 MATH 304 Section 3

Assigned: Wednesday, November 19.
Potentially Collected: Monday, December 1.

1. Find the values of t which are solutions to the following equations.

$$(a) \det \left(\begin{bmatrix} t-2 & 2 \\ 3 & t-3 \end{bmatrix} \right) = 0$$

$$(b) \det \left(\begin{bmatrix} t-1 & -4 \\ 0 & t-4 \end{bmatrix} \right) = 0$$

$$(c) \det \left(\begin{bmatrix} t-1 & 0 & 1 \\ -2 & t+2 & -1 \\ 0 & 0 & t+1 \end{bmatrix} \right) = 0$$

2. Using determinants, which of the following matrices are singular?

$$(a) \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \\ 2 & 1 & 0 \end{bmatrix}$$

$$(b) \begin{bmatrix} 1 & 2 & 3 \\ 2 & 1 & 0 \\ -3 & 1 & 2 \end{bmatrix}$$

3. Suppose the matrix A satisfies the equation $A^2 = A$. Show that either A is singular or $\det(A) = 1$.