

Submitting HW Tips**HW # 9**

1 Verify that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (b-a)(c-a)(c-b)$.

(This is the *Vandermonde Determinant*, which is used in MA 366/266/303/265/520 and elsewhere.)

2 Let $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 1 & 2 & 2 & 1 \\ 0 & 2 & 4 & 2 \\ 3 & 5 & 2 & 1 \end{bmatrix}$, where $|A| = 10$. For the system $A\mathbf{x} = \mathbf{b}$, use **Cramer's Rule**

to compute x_2 when $\mathbf{b} = \begin{bmatrix} 2 \\ 0 \\ 1 \\ -1 \end{bmatrix}$.

3 Let $A = \begin{bmatrix} 3 & -1 & 0 \\ 3 & 2 & 1 \\ 7 & 5 & 2 \end{bmatrix}$, compute $(A^{-1})_{12} + (A^{-1})_{22}$.

4 TRUE/FALSE Questions: Page 279: #5.5, 5.6.

5 Find all eigenvalues and a basis for each eigenspace of A , where $A = \begin{bmatrix} 6 & 1 \\ 4 & 9 \end{bmatrix}$.

6 If $A = \begin{bmatrix} 6 & 1 \\ 4 & 9 \end{bmatrix}$ (see above problem), then compute $A^{20}\mathbf{u}$, where $\mathbf{u} = \begin{bmatrix} 1 \\ 4 \end{bmatrix}$.