

Name: _____

R. Hammack

Score: _____

Directions: Please answer all questions in the space provided. Use of calculators or any form of electronic communication device is strictly forbidden on this quiz.

Your quiz would have had one of the following two problems.

1. Use any method discussed in class to find
$$\begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 0 & 2 & 1 \\ 6 & 3 & 7 & 5 \\ 9 & 3 & 3 & 7 \end{vmatrix}.$$

$$\begin{aligned} & \begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 0 & 2 & 1 \\ 6 & 3 & 7 & 5 \\ 9 & 3 & 3 & 7 \end{vmatrix} \\ = & \begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 0 & 2 & 1 \\ 0 & 1 & 5 & 1 \\ 0 & 0 & 0 & 1 \end{vmatrix} && (\text{Do } R_3 - 2R_1 \rightarrow R_3 \text{ and } R_4 - 3R_1 \rightarrow R_4) \\ = & - \begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 1 & 5 & 1 \\ 0 & 0 & 2 & 1 \\ 0 & 0 & 0 & 1 \end{vmatrix} && (\text{Do } R_2 \leftrightarrow R_3) \\ = & -(3)(1)(2)(1) = \boxed{-6} && (\text{product of diagonal entries}) \end{aligned}$$

2. Use any method discussed in class to find
$$\begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 0 & 2 & 2 \\ 6 & 4 & 3 & 6 \\ 9 & 3 & 3 & 9 \end{vmatrix}.$$

$$\begin{aligned} & \begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 0 & 2 & 2 \\ 6 & 4 & 3 & 6 \\ 9 & 3 & 3 & 9 \end{vmatrix} \\ = & \begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 0 & 2 & 2 \\ 0 & 2 & 1 & 2 \\ 0 & 0 & 0 & 5 \end{vmatrix} && (\text{Do } R_3 - 2R_1 \rightarrow R_3 \text{ and } R_4 - 3R_1 \rightarrow R_4) \\ = & - \begin{vmatrix} 3 & 1 & 1 & 2 \\ 0 & 2 & 1 & 2 \\ 0 & 0 & 2 & 2 \\ 0 & 0 & 0 & 3 \end{vmatrix} && (\text{Do } R_2 \leftrightarrow R_3) \\ = & -(3)(2)(2)(3) = \boxed{-36} && (\text{product of diagonal entries}) \end{aligned}$$