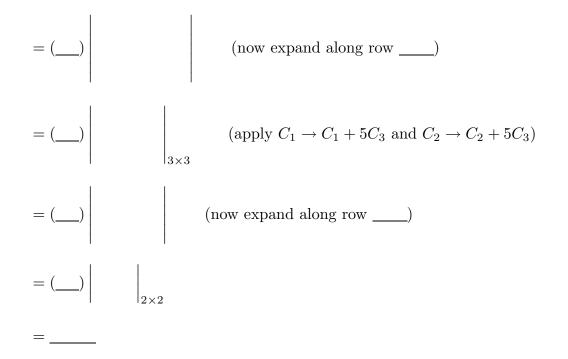
Group: _____ Present: _____

1. Use elementary row operations to find the determinant:

$$|A| = \begin{vmatrix} 1 & 4 & 5 \\ -2 & 3 & 4 \\ 3 & 1 & 9 \end{vmatrix} =$$

2.
$$|B| = \begin{vmatrix} 0 & 0 & 0 & 0 \\ 2 & 1 & 4 \\ -3 & 10 & 15 \end{vmatrix} =$$

 $|C| = \begin{vmatrix} 7 & 14 \\ 1 & 2 \end{vmatrix} =$
3. $|D| = \begin{vmatrix} 2 & 1 & 3 & 0 & 7 \\ 1 & 4 & -1 & 2 & 2 \\ 0 & 3 & 0 & 1 & -1 \\ 1 & 4 & 1 & 0 & -2 \\ 3 & 3 & 2 & 4 & 1 \end{vmatrix}$ (apply $C_5 \to C_5 + C_4$ and $C_2 \to C_2 - 3C_4$)
 $= \begin{vmatrix} & & & \\ &$



4. Which of the matrices above are invertible? (Don't compute any inverses) Explain!

5. Let A be an invertible matrix. Prove that $|A^{-1}| = \frac{1}{|A|}$ (Use the product theorem)

Suppose now that A is an orthogonal matrix. What are the possible values for |A|? Explain!