Did you all learn other methods in class?

Many of you solved 3x3 this way:

$$A' = \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} \quad \text{rewrite: } \left[\begin{matrix} a & b & c \\ d & e & f \\ g & h & i \\ a & b & c \\ d & e & f \end{matrix}\right] \Big\} \text{rewrite first 2 rows}$$

then $\det A' = a \cdot e \cdot i + d \cdot h \cdot c + g \cdot b \cdot f - d \cdot b \cdot i - a \cdot h \cdot f - g \cdot e \cdot c$

So for $B = \begin{bmatrix} 2 & 3 & 4 \\ 4 & 3 & 1 \\ 1 & 2 & 4 \end{bmatrix}$ $\det B = 2 \cdot 3 \cdot 4 + 4 \cdot 2 \cdot 4 + 1 \cdot 3 \cdot 1 - 4 \cdot 3 \cdot 4 - 2 \cdot 2 \cdot 1 - 1 \cdot 3 \cdot 4 = -5$.

And, many of you stopped short of I for 4x4, saying:

$$\det \begin{bmatrix} a & b & c & d \\ 0 & e & f & g \\ 0 & 0 & h & i \\ 0 & 0 & 0 & j \end{bmatrix} = a \cdot e \cdot h \cdot j$$

this is true, but can you prove it? This is <u>not</u> given by the chapter (directly).

While the "trick" at the top works for 3x3, it doesn't work for 4x4.

$$\begin{vmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 4 & 3 & 2 & 1 \\ 8 & 7 & 6 & 5 \end{vmatrix} \not\to \cancel{\left|\begin{matrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 4 & 3 & 2 & 1 \\ 8 & 7 & 6 & 5 \\ 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 4 & 3 & 2 & 1 \end{matrix}\right|}$$

this doesn't work!

the reason it works for 3x3 is it rearranges the standard cofactor expansion.