At the end of class today something seemed to be going wrong so here are the correct values. I did not write down what we did in class but presumably it was different than this:

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 0 & 1 \\ 2 & 3 & 1 \end{bmatrix}$$

$$\text{adj}(A) = \begin{bmatrix} -3 & 7 & 2 \\ -2 & -5 & 11 \\ 12 & 1 & -8 \end{bmatrix}$$

$$\det(A) = 29$$

$$A \cdot \text{adj}(A) = \begin{bmatrix} 29 & 0 & 0 \\ 0 & 29 & 0 \\ 0 & 0 & 29 \end{bmatrix} \det(A) \cdot I_3$$

$$\text{adj}(A) \equiv \begin{bmatrix} 2 & 2 & 2 \\ 3 & 0 & 1 \\ 2 & 1 & 2 \end{bmatrix} \pmod 5$$

$$\det(A) \equiv 4 \pmod 5$$

$$(\det(A))^{-1} \equiv 4 \pmod 5$$

$$B \equiv (\det(A))^{-1}\text{adj}(A) = \begin{bmatrix} 3 & 3 & 3 \\ 2 & 0 & 4 \\ 3 & 4 & 3 \end{bmatrix} \equiv A^{-1} \pmod 5$$

$$B \cdot A = \begin{bmatrix} 21 & 15 & 15 \\ 10 & 16 & 10 \\ 25 & 15 & 16 \end{bmatrix} \equiv \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \pmod 5$$

Hope that helps.