Name MM Moce

Quiz 3 Math 2210Q, Section 12

(1) Compute the inverse of

$$\begin{bmatrix} 1 & 0 & 1 \\ 2 & 6 & 1 \\ 1 & 3 & 0 \end{bmatrix}$$

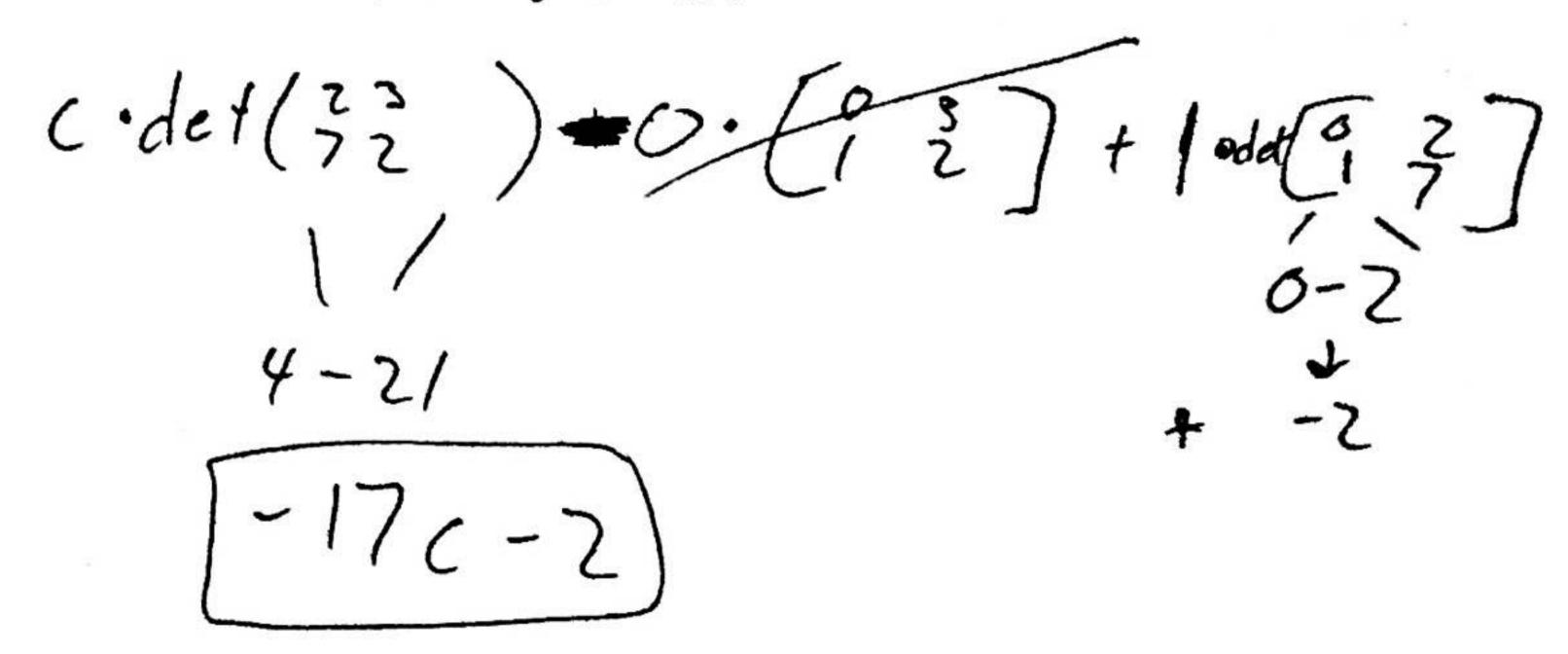
Show your work.

$$\begin{bmatrix}
1 & 0 & 1 \\
2 & 6 & 1 \\
1 & 3 & 0
\end{bmatrix}
\begin{bmatrix}
1 & 0 & 0 \\
0 & 1 & 0
\end{bmatrix}
\begin{bmatrix}
1 & 0 & 1 \\
0 & 6 & 1 \\
1 & 3 & 0
\end{bmatrix}
\begin{bmatrix}
1 & 0 & 1 \\
0 & 6 & 1 \\
1 & 3 & 0
\end{bmatrix}
\begin{bmatrix}
1 & 0 & 1 \\
0 & 6 & -1 \\
0 & 3 & -1
\end{bmatrix}$$

$$R_{2} = R_{2} = R_{3} = R_{3} = 3 R_{3}$$

$$\begin{bmatrix} c & 0 & 1 \\ 0 & 2 & 3 \\ 1 & 7 & 2 \end{bmatrix}$$

where c is some constant. Show your work.



(3) For what value(s) of c is the linear transformation represented by the matrix not invertible?

Bonus: Consider the complex numbers, C, as a two dimensional R-vector space. What matrix represents complex conjugation, i.e., the map $a + bi \mapsto a - bi$? The complex numbers are obtained by adjoining a root, i, of the polynomial $x^2 + 1$ to R. Loosely speaking, complex conjugation corresponds to choosing the other root. If you don't have time to answer here, send me the answer on Piazza (using LaTeX to render the matrix) before I post solutions.

