## CSci 2033 Practice Exercises Set \#11 March 23, 2018

0 Text: Sect. 2.5: Exercises 1, 3, 7, and 9.
Sect. 3.1: Practice problem, Exercises 1, 3, 11, 39.
Sect. 3.3: Practice problem, Exercises 1, 25, 27.
1 Answer and give a short proof: [from Set \#10]
(f) If $A$ and $B$ are invertible then so is $A B^{-1}$. $(\mathrm{T} / \mathrm{F})$ If true what is the inverse of $A B^{-1}$ ?
(g) If $A$ and $B$ are invertible then so is $A^{T} B$. $(\mathrm{T} / \mathrm{F})$ If true what is the inverse of $A^{T} B$ ?

2 Calculate the inverse of the matrix shown on

$$
A=\left[\begin{array}{ccc}
2 & 2 & -4 \\
-1 & 0 & 2 \\
1 & 3 & -1
\end{array}\right]
$$

3 Find the LU factorization of the matrix $A$

4 Use your answer in (3) to compute $\operatorname{det}(A)$.

5 Explain with a simple diagram why a linear mapping that is not one-to-one cannot be invertible. Same thing for a mapping that is not onto.

