1) **(20 pts.) Show all your work**

Let A be a non-singular nxn matrix with $n>1$.

a) Calculate $\det(adjA)$ in terms of $\det A$.

$$A^{-1} = \frac{1}{\det A}(adj\,A)$$

$$adj\,A = \det A \cdot A^{-1}$$

$$\det(adj\,A) = \det(\det A \cdot A^{-1})$$

$$= (\det A)^n \cdot \det(A^{-1})$$

$$= (\det A)^n \cdot (\det A)^{-1} = (\det A)^{n-1}$$

b) Show that $(adjA)^{-1} = (\det A^{-1})A = adj(A^{-1})$.

$$adj\,A = \det A \cdot A^{-1}$$

$$(adj\,A)^{-1} = (\det A \cdot A^{-1})^{-1}$$

$$= (\det A)^{-1} \cdot A$$

$$= \det(A^{-1}) \cdot A = adj(A^{-1})$$