Chris Bendel and Peter Cholak Math 222 - Quiz 9 Wednesday, March 31

Be sure to carefully write up your answers. It is suggested that you first write out a draft of your proposed questions and then carefully rewrite that draft to get your final version. You do *not* have to write the answers on this sheet of paper.

Let $\sigma = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 3 & 4 & 1 & 6 & 7 & 5 & 9 & 8 \end{pmatrix}$ and $\tau = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 3 & 4 & 2 & 7 & 5 & 1 & 6 & 8 \end{pmatrix}$.

Express both σ and τ in disjoint cycle notation.

Express $\sigma^{-1}, \sigma\tau$ and $\tau\sigma$ in disjoint cycle notation.   Find the orders of σ, τ, and $\sigma\tau$.

Write σ and τ as a product of transpositions.   Find the parity of σ, τ, $\sigma\tau$ and $\sigma\tau^2$.