Vertex Coloring in P Time.

Key (Using Intger sequences.. A002260 and A004736 as a Pair**)**
pairs 1-9..
{A00220,A004736}={1,1}{1,2}{2,1}{1,3}{2,2}{3,1}{1,4}{2,3}{3,2}...

A 17 clue Sudoku grid example.
{_,_,_,7,_,_,_,_,_}
{1,_,_,_,_,_,_,_,_}
{_,_,_,4,3,_,2_,_}
{_,_,_,_,_,_,_,_,6}
{_,_,_,5,_,9,_,_,_}
{_,_,_,_,_,_,4,1,8}
{_,_,_,_,8,1,_,_,_}
{_,_,2,_,_,_,_,5,_}

You first work out all the possible numbers in the empty sapaces by checking each space against the corresponding row column and 3*3 sub grid that the space is in.

From this information you make a grid for A00220 and a grid for A004736 This will mean that some possiblities become a single smaller integer in one of the 2 grids.

Then from this information you make 2 grids correnspondingto A00220 and A004736 of the Integers in the A00220 Grid and you call these grids 2a and 2b and you make 2 grids corresponding to A00220 and A004736 of the in integers in the A004736 grid and you call these grids 2c and 2d

Grid 2 a - c will now need so many 1's and so many 2's in each of the rows columns and 3*3 subgrids, Grid 2d will also require a 3 to be colored but it can be reduced to 2 lower Grids 3a and 3b where by only 2 colors in the right propotions need to be filled in.

By the time you have the 5 bottom grids only needing to color 1’s and 2’s you should still have a solvable problem due to the fact of these grids being equal to the main grid at the top in terms of the process being completely reversable once the bottom grids are solved hence solving in this case 5*2 colour grids effectivly gives you a solution to a 9 color grid at the top.

The reason you get 2 unique pairs of smaller intergers from each integer with these 2 sequences is because the second sequence is actually a count of how many times an Integer has occoured in the first sequence thus the pairs do not repeat this also make the whole system reversable.

Any coloring problem with this method can be reduced to a small number of grids compared to the orginal grid size in P time and this should convert all coloring problems to a small number of 2 color vertex coloring problems which are solvable in P time.

Therefore P = NP.