

```
 $\sigma\_Perm \circ \tau\_Perm$  /; Length[ $\sigma$ ] == Length[ $\tau$ ] :=  $\sigma$ [[List@@ $\tau$ ]];
```

```
Perm /: ( $\sigma\_Perm$ )-1 /; PermutationQ[ $\sigma$ ] := ( $\tau = \sigma$ ;  
Do[ $\tau$ [[ $\sigma$ [[ $i$ ]]] =  $i$ , { $i$ , Length[ $\sigma$ ]}];  
 $\tau$ )
```

Can you make this more efficient?

```
PermutationQ[ $\sigma\_Perm$ ] := Sort[List@@ $\sigma$ ] === Range[Length[ $\sigma$ ]]
```

Perm::usage =

"Perm[5,2,3,1,4] means the permutation that maps 1→5, 2→2, 3→3, 4→1, 5→4."