



-(3w+2b) & =1 (12 + 8)
Auto-Tag Chess

(*Auto-Tag Chess*: A piece may make a move (a 'tag') to a square occupied by another piece of the same colour, remaining on the square while the tagged piece makes its own move as part of the same turn of play. The move by a tagged piece may be another tag, thus producing a chain of tags; the chain may end in a capture, so that check can be threatened through such a chain. Pawns tag by diagonally forward moves. In the solutions, tags are not distinguished from the final move in a chain; all are bracketed together by '()'. Introduced in *Chessics* #11, 1981, https://www.mayhematics.com/che/chessics_11.pdf; for a more recent and more elaborate account of a family of similar variants, check <https://juliasfairies.com/wp-content/uploads/Reactions-6-Chris-Tylor.pdf>.)

Solution:

-1.Rc6-f6 {Kf6-g5} Sh3-f2 {f2-f1=Q} -2.b2-a3 {Ba3-c1} Rc3-e3 {e3xQf2} -3.Ke6-f6 & 1.Qf2-f4 {Rf8, Se6, Kd5, Rd1, Bb3, Pa4, Ra3, Bb2, Pa3, Rb3, Bd5, Kc6, Re6, Sf4, Qxh2}=

Notes:

- **Five pairs of pieces** exchange places in a **single move!** (See diagrams.)
- 1.... Kh8-g7 is a self-check: 1.... Kh8-g7?? 2.Sf4-e6 {Rc6, Kd5, Be6, Sxg7}.
- Similarly, 1.... Kh8-h7 is impossible, though now White needs a longer chain: 1.... Kh8-h7?? 2.Qh2-f4 {Se6, Rc6, Kd5, Be6, Sf8, Rf4, Qf8, Sxh7}. And note that during the “submoves” of this (virtual) move we also have an exchange of places $Qf4 \leftrightarrow Rf8$, as well as that Sf4 and Rf8, which had already exchanged places, return (temporarily) to their original positions, that is, this pair makes a **double place exchange!**
- Try: -1.Re6-f6 {Kf6-g5}? and -3.Rc6-e6 {Ke6-f6}, which fails as -2.b2-a3 {Ba3-c1} is a check to Black! Indeed, then there is a forward virtual move: 1.Rd5-d1 {Bb3, Pa4, Ra3, Bb2, Pa3, Rb3, Be6, Rf6, Ke6, Bb3, Rb2, Bf6, Re6, Kf6, Bxh8}. Here we have an additional place exchange (not counting the ones from the main line) $Pb2 \leftrightarrow Ra3$, as well as **another double place exchange**, $Re6 \leftrightarrow Kf6$ and $Ke6 \leftrightarrow Rf6!$
- **Ten exchanges of places.** The colors record positions of respective pairs of pieces in key moments:
 - 1.Rc6-f6 {Kf6-g5} Sh3-f2 {f2-f1=Q} -2.b2-a3 {Ba3-c1} Rc3-e3 {e3xQf2} -3.Ke6-f6 & [Ba3,Pb2][Ra4,Pb3][Bd1,Rd5][Rc6,Ke6][Rf4,Sf8] 1.Qf2-f4 {Rf8, Se6, Kd5, Rd1, Bb3, Pa4, Ra3, Bb2, Pa3[Pa3,Bb2], Rb3[Pa4,Rb3], Bd5[Rd1,Bd5], Kc6, Re6[Kc6,Re6], Sf4[Sf4,Rf8], Qxh2}= 1.... Kh8-h7?? 2.Qh2-f4[Qf4,Rf8] {Se6, Rc6, Kd5, Be6, Sf8, Rf4[Rf4,Sf8], Qf8[Rf4,Qf8], Sxh7}
 - Try: -1.Re6-f6 {Kf6-g5}? Sh3-f2 {f2-f1=Q} -2.b2-a3 {Ba3-c1}?? & [Re6,Kf6] 1.Rd5-d1 {Bb3, Pa4, Ra3[Ra3,Pb2], Bb2, Pa3, Rb3, Be6, Rf6, Ke6[Kc6,Rf6], Bb3, Rb2[Pa3,Rb2], Bf6, Re6, Kf6[Rc6,Kf6], Bxh8}
- And as a little extra that spices it all up, **four cyclic exchanges**—triplets in the main line (including virtual play): $(Ke6, Rd5, Bd1) \mapsto (Kd5, Rd1, Be6)$ and $(Kc6, Bd5, Re6) \mapsto (Kd5, Be6, Rc6)$, and quadruplets in the try: $(Bb2, Kf6, Be6, Rb3) \mapsto (Bf6, Ke6, Bb3, Rb2)$ and $(Bb2, Rf6, Be6, Rb3) \mapsto (Bf6, Re6, Bb3, Rb2)$.

