

# Shouji Rating System

## Formulas

$$A\mu = 1500$$

$$B\mu = 1500$$

$$A\sigma = 225$$

$$B\sigma = 225$$

$$A\zeta = 0$$

$$B\zeta = 0$$

$$\beta = 400$$

$$\alpha = 0.5$$

$$\varphi = 0.5$$

$$Af = \beta At$$

$$Bf = \beta Bt$$

$$\rho = \beta((At + Bt)/2)$$

$$At = (A\sigma/(A\sigma + \beta))^{**} (1 - \alpha)$$

$$Bt = (B\sigma/(B\sigma + \beta))^{**} (1 - \alpha)$$

$$Ap = \arctan((A\mu - B\mu)/\rho)/\pi + 0.5$$

$$Bp = \arctan((B\mu - A\mu)/\rho)/\pi + 0.5$$

$$As, 1 = \text{Win}, 0.5 = \text{Draw}, 0 = \text{Loss}.$$

$$Bs, 1 = \text{Win}, 0.5 = \text{Draw}, 0 = \text{Loss}.$$

$$A\mu' = A\mu + Af(As - Ap) + AfA\zeta$$

$$B\mu' = B\mu + Bf(Bs - Bp) + BfB\zeta$$

$$A\sigma' = \varphi A\sigma + A\sigma|A\zeta|$$

$$B\sigma' = \varphi B\sigma + B\sigma|B\zeta|$$