$$P_{OU} = \frac{\omega_p \, \omega_s}{P_{new}}$$

$$\frac{\omega_p \, \omega_s}{P_{new}} = -\omega_p \, sinh() \, sin() + j \, \omega_p \, cosh() \, cos()$$

$$\frac{1}{P_{new}} = \frac{-1}{\omega_s} \, sinh() \, sin() + j \, \frac{1}{\omega_s} \, cosh() \, cos()$$

$$\frac{1}{P_{new}} = \frac{-1}{\omega_s} \, sinh() \, sin() + j \, \frac{1}{\omega_s} \, cosh() \, cos()$$