/* Models for Seasonal Time-Series Data */
→ Seasonal ARIMAs

[Seasonal Autoregressive Model: ARMA(1,0)s]

$$y_t - \mu = \phi_s(y_{t-s} - \mu) + \epsilon_t \text{ or}$$
$$(1 - \phi_s B^s)(y_t - \mu) = \epsilon_t$$

[Seasonal Moving Average Model: ARMA(0,1)s]

$$y_t = \theta_0 + (1 - \theta_s B^s)\epsilon_t$$

[Seasonal Autoregressive Moving Average Model: ARMA(1,1)s]

$$(1 - \phi_s B^s)(y_t - \mu) = (1 - \theta_s B^s)\epsilon_t$$

[Seasonal Multiplicative Autoregressive Integrated Moving Average Model]
→ ARIMA(p,d,q)(P,D,Q)s
  (p,d,q) : Nonseasonal part of the model
  (P,D,Q)s : Seasonal part of the model

  cf) ARIMA(1,1,1)(1,1,1)^4
    $$(1 - \phi_1 B)(1 - \Phi_1 B^4)(1 - B)(1 - B^4)y_t = (1 - \theta_1 B)(1 - \Theta_1 B^4)e_t$$
     ①   ②   ③   ④   ⑤   ⑥
     ① nonseasonal AR(1)
     ② seasonal AR(1)
     ③ nonseasonal difference
     ④ seasonal difference
     ⑤ nonseasonal MA(1)
     ⑥ seasonal MA(1)