$$\frac{1}{(1-r)^n} = \sum_{i=1}^{\infty} \binom{i+n-1}{n-1} r^i$$

$$\phi(B)X_t = \theta(B)Z_t$$

$$X_t = \frac{\theta(B)}{\phi(B)} Z_t = \sum_{i=0}^{\infty} \psi_i Z_{t-i}$$

$$X_t = \sum_{j=-\infty}^{\infty} \psi_j Z_{t-j}$$

$$\gamma(k) = \sigma^2 \sum_{j=-\infty}^{\infty} \psi_j \psi_{j+|k|}$$

$$\Gamma = \{\gamma(j-i); 1 \le i \le p, 1 \le i \le p\}$$
$$\gamma' = (\gamma(1), \gamma(2), \ldots, \gamma(p))$$
$$\phi' = (\phi_1, \ldots, \phi_2)$$

Yule-Walker

$$\hat{\phi} = \hat{\Gamma}' \hat{\gamma}$$
$$\hat{\sigma^2} = \hat{\gamma}(0) - \hat{\phi}' \hat{\gamma}$$