* 10/17. Assignment 3.

1. Show that, for the MA(1) process $Y_t = e_t - \theta e_{t-1}$, the autocorrelation function does not change when θ is replaced by $1/\theta$.

We've seen that, for MA(1) process:

$\rho_k = 0$ for $k > 1$ (doesn't matter θ)

$\rho_1 = \frac{-\theta}{1-\theta^2}$

replace θ with $\frac{1}{\theta}$

$$\frac{\frac{1}{\theta}}{1-\frac{1}{\theta^2}} = \frac{\frac{-1}{\theta}}{\frac{\theta^2-1}{\theta^2}} = \frac{-\theta}{\theta^2-1}$$

$\therefore$ autocorrelation doesn't change.