Original series — $I(1)$
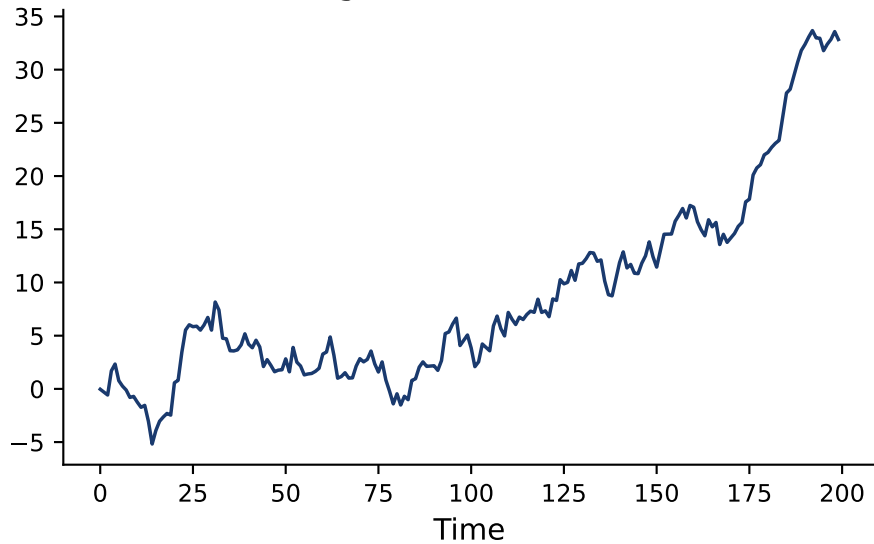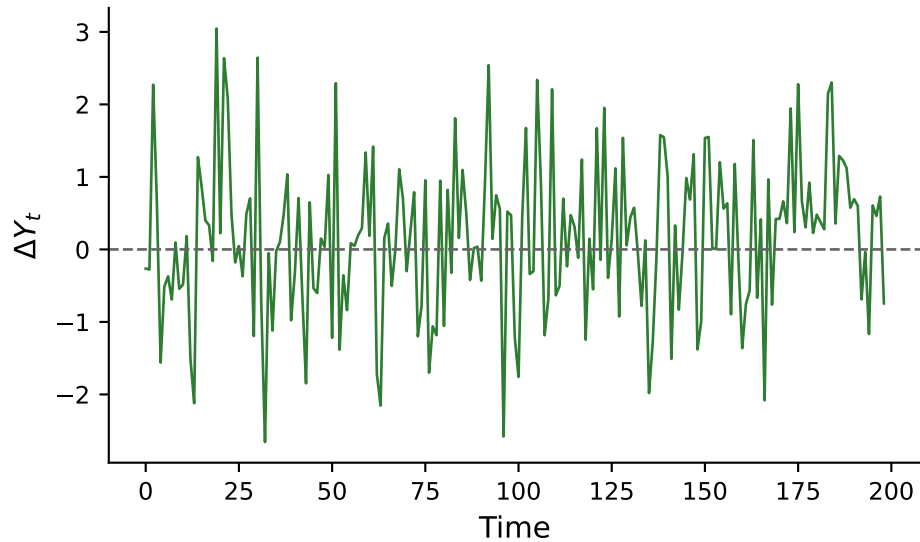
Y_t (non-stationary)

After first difference — $I(0)$

$\Delta Y_t = Y_t - Y_{t-1}$