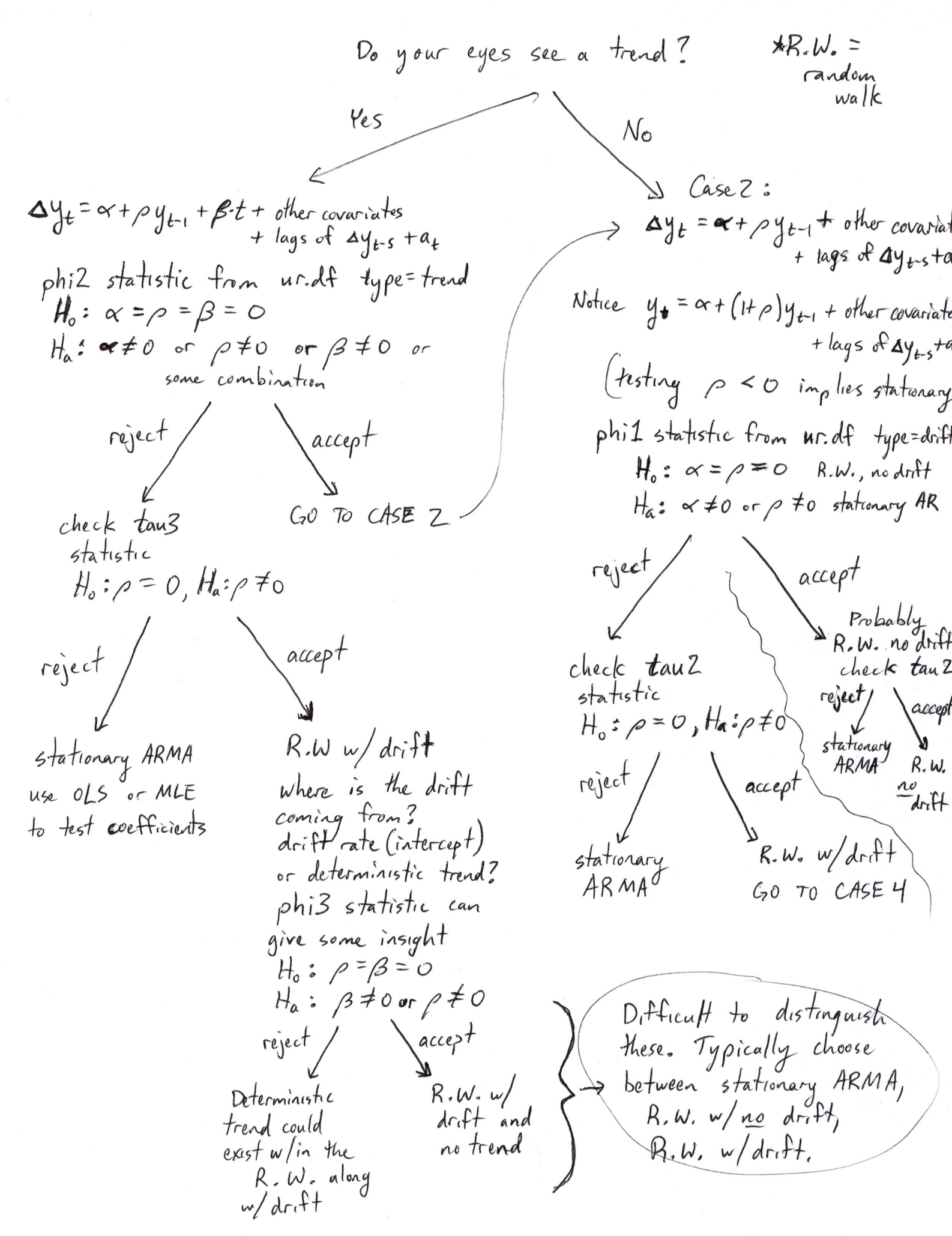
Do your eyes see a trend?
*R.W. = random walk
Yes
No
$\Delta y_t = \alpha + \rho y_{t-1} + \beta \cdot t$ + other covariates + lags of $\Delta y_{t-s} + a_t$
phi2 statistic from ur.df type=trend
$H_0: \alpha = \rho = \beta = 0$
$H_a: \alpha \neq 0$ or $\rho \neq 0$ or $\beta \neq 0$ or some combination
reject
accept
check tau3 statistic
$H_0: \rho = 0, H_a: \rho \neq 0$
GO TO CASE 2
reject
accept
stationary ARMA use OLS or MLE to test coefficients
R.W w/ drift where is the drift coming from? drift rate (intercept) or deterministic trend? phi3 statistic can give some insight
$H_0: \rho = \beta = 0$
$H_a: \beta \neq 0$ or $\rho \neq 0$
reject
accept
Deterministic trend could exist w/in the R.W. along w/drift
R.W. w/ drift and no trend
Case 2:
$\Delta y_t = \alpha + \rho y_{t-1}$ + other covariates + lags of Δy_{t-s} + a
Notice $y_t = \alpha + (1+\rho) y_{t-1}$ + other covariates + lags of Δy_{t-s} + a
(testing $\rho < 0$ implies stationary
phi1 statistic from ur.df type=drift
$H_0: \alpha = \rho = 0$ R.W., no drift
$H_a: \alpha \neq 0$ or $\rho \neq 0$ stationary AR
reject
accept
check tau2 statistic
$H_0: \rho = 0, H_a: \rho \neq 0$
Probably R.W. no drift check tau2
reject
accept
stationary ARMA
R.W. no drift
reject
accept
stationary ARMA
R.W. w/ drift GO TO CASE 4
Difficult to distinguish these. Typically choose between stationary ARMA, R.W. w/ no drift, R.W. w/ drift.