Characteristic Roots
(Must be OUTSIDE unit circle)

- Unit Circle
- ✕ Roots: $z_1 = 1.17$, $z_2 = -2.84$
- ● Inverse roots

Stationarity Triangle
(Point must be INSIDE)

★ $(\phi_1, \phi_2) = (0.5, 0.3)$

STATIONARY REGION

AR(2) Characteristic Roots Summary

Model: $X_t = 0.5X_{t-1} + 0.3X_{t-2} + \varepsilon_t$

1. Characteristic Equation:
   $1 - 0.5z - 0.3z^2 = 0$
   Or: $0.3z^2 + 0.5z - 1 = 0$

2. Roots:
   $z_1 = 1.1736$
   $z_2 = -2.8403$

3. Moduli:
   $|z_1| = 1.1736 > 1$ ✓
   $|z_2| = 2.8403 > 1$ ✓

4. Conclusion:
   STATIONARY
   (Roots outside unit circle)