🧪 MU Test Plan — Test 9 (Breaking Degeneracy in Action Costs)

Goal

- To test whether the **β-threshold behavior** reappears when the two paths no longer have equal action costs.
- This will confirm whether degeneracy is what allowed multi-dimensional coexistence in Test 8.

Parameters

- $\hbar$ = 0.1 (fixed)
- γ = 1.0 (baseline)
- Paths:
  - Slow path: r_slow(t) = 0.25·t (same as before)
  - Fast path: **modified tilt** → r_fast(t) = 0.6 + 0.35·t (larger slope)
    - This makes Q_fast > Q_slow (so action cost is strictly higher).
- β = [8.0 → 10.0, step=0.25]
- Selector: T(r) = 1/(1+|r−r_c|), r_c = 0.25

Predictions

- **Slow path (lower Q)**: should regain its clean survival threshold at β≈9.
- **Fast path (higher Q)**:
  - Likely suppressed completely, never crossing survival threshold.
  - If it survives at all, it will be much weaker than slow.
- If true, this means:
  - Degeneracy (Q_slow = Q_fast) → **multi-dimensional coexistence**.
  - Non-degeneracy (Q_slow < Q_fast) → **unique selection** dominated by slow.

What We're Looking For

- Does w_slow explode at β≈9, while w_fast stays suppressed?
- Is the phase-transition sharp again (like in Test 7)?
- This would validate that MU allows **branch multiplicity only under degeneracy**, but collapses when a clear winner exists.