```
A5 := Transpose[{Coefficient[L5[1], w, #] & /@ Range[0, 8], Coefficient[L5[w], w, #] & /@ Range[0, 8],
    Coefficient[L5[w^2], w, #] & /@ Range[0, 8], Coefficient[L5[w^3], w, #] & /@ Range[0, 8],
    Coefficient[L5[w^4], w, #] & /@ Range[0, 8], Coefficient[L5[w^5], w, #] & /@ Range[0, 8],
    Coefficient[L5[w^6], w, #] & /@ Range[0, 8], Coefficient[L5[w^7], w, #] & /@ Range[0, 8]}]
B5 := Drop[A5, 1]
v5 := Take[A5, 1]
r5 := LinearSolve[B5, Coefficient[P5, w, #] & /@ Range[1, 8]]
R5 := r5.{1, w, w^2, w^3, w^4, w^5, w^6, w^7}

F5 := Simplify[v5.r5 - Coefficient[P5, w, 0]][[1]]


q6 := S6 + 3 * c2 * S5 * r + (c3 / 2 + 3 * c2^2) * S4 * r^2 +
   (-c4 / 3 + c3 * c2 / 6 + c2^3) * S3 * r^3 + (-3 * c5 / 4 - 3 * c4 * c2 / 2 - c3^2 / 8 - 3 * c3 * c2^2 / 4) * S2 * r^4
q̃6 := S̃6 + 3 * c̃2 * S̃5 * r + (c̃3 / 2 + 3 * c̃2^2) * S̃4 * r^2 + (-c̃4 / 3 + c̃3 * c̃2 / 6 + c̃2^3) * S̃3 * r^3 +
   (-3 * c̃5 / 4 - 3 * c̃4 * c̃2 / 2 - c̃3^2 / 8 - 3 * c̃3 * c̃2^2 / 4) * S̃2 * r^4
P6 := q̃6 - q6 + q̃4 * R3 - (1 / 2) * S2 * R3^2 - S3 * R4 - 3 * S2 * R5
L6[f_] := D[f, w] * r + 5 * (s - 2 * w) * f

A6 := Transpose[{Coefficient[L6[1], w, #] & /@ Range[0, 10], Coefficient[L6[w], w, #] & /@ Range[0, 10],
    Coefficient[L6[w^2], w, #] & /@ Range[0, 10], Coefficient[L6[w^3], w, #] & /@ Range[0, 10],
    Coefficient[L6[w^4], w, #] & /@ Range[0, 10], Coefficient[L6[w^5], w, #] & /@ Range[0, 10],
    Coefficient[L6[w^6], w, #] & /@ Range[0, 10], Coefficient[L6[w^7], w, #] & /@ Range[0, 10],
    Coefficient[L6[w^8], w, #] & /@ Range[0, 10], Coefficient[L6[w^9], w, #] & /@ Range[0, 10]}]
B6 := Drop[A6, 1]
v6 := Take[A6, 1]
r6 := LinearSolve[B6, Coefficient[P6, w, #] & /@ Range[1, 10]]

F6 := Simplify[v6.r6 - Coefficient[P6, w, 0]][[1]]
```

Now that we have expresions for the polynomials F_d, we proceed to compute the resultants defined in Section 3.3.

```
R14 := Resultant[F3, F4, β2]
R15 := Resultant[F3, F5, β2]
R16 := Resultant[F3, F6, β2]
R25 := Resultant[R14, R15, β1]
R26 := Resultant[R14, R16, β1]
R36 := Resultant[PolynomialQuotient[R25, β0 - α0, β0], R26, β0]
```

In order to prove that R_{36} is not identically zero as a function of (λ,α) we evaluate it at the following specific values to obtain a non-zero complex number:

```
λ1 = 2 - ⅈ;
λ2 = 2 * ⅈ;
α0 = 1;
α1 = 0;
α2 = 0;
```