

```

sign[ $\mathcal{E}_-$ ] := Module[{n, d, v, p, rs, e, k},
  {n, d} = NumeratorDenominator[ $\mathcal{E}$ ];
  {n, d} /=  $\omega^{\text{Exponent}[n, \omega]/2 + \text{Exponent}[n, \omega, \text{Min}]/2}$ ;
  p = Factor[ $\omega^2[v] @ n * \omega^2[v] @ d /. v \rightarrow 4 u^2 - 2$ ];
  rs = Solve[p == 0, u, Reals];
  If[rs === {}, Sign[p /. u -> 0],
    rs = Union@{u /. rs};
    Sign[(-1)e=Exponent[p, u] Coefficient[p, u, e]] + Sum[
      k = 0;
      While[(d = RootReduce[ $\partial_{\{u, ++k\}} p /. u \rightarrow r$ ]) == 0];
      If[EvenQ[k], 0, 2 Sign[d]] *  $\theta[u - r]$ ,
      {r, rs}]
  ]
]

```