

```
 $\omega_2[v_][p_] := \text{Module}[\{q = \text{Expand}[p], n, c\},$   
  If[q === 0, 0,  
    c = Coefficient[q,  $\omega$ , n = Exponent[q,  $\omega$ ]];  
    c  $v^n + \omega_2[v][q - c (\omega + \omega^{-1})^n]$ ];
```