

## Rules for integrands of the form $(c + d x)^m (a + b \operatorname{Sinh}[e + f x])^n$

**N:**  $\int u^m (a + b \operatorname{Sinh}[v])^n dx$  when  $u = c + d x \wedge v = e + f x$

Derivation: Algebraic normalization

Rule: If  $u = c + d x \wedge v = e + f x$ , then

$$\int u^m (a + b \operatorname{Sinh}[v])^n dx \rightarrow \int (c + d x)^m (a + b \operatorname{Sinh}[e + f x])^n dx$$

Program code:

```
Int[u_^m_.*(a_.+b_.*Sinh[v_])^n_,x_Symbol] :=  
  Int[ExpandToSum[u,x]^m*(a+b*Sinh[ExpandToSum[v,x]])^n,x] /;  
FreeQ[{a,b,m,n},x] && LinearQ[{u,v},x] && Not[LinearMatchQ[{u,v},x]]
```

```
Int[u_^m_.*(a_.+b_.*Cosh[v_])^n_,x_Symbol] :=  
  Int[ExpandToSum[u,x]^m*(a+b*Cosh[ExpandToSum[v,x]])^n,x] /;  
FreeQ[{a,b,m,n},x] && LinearQ[{u,v},x] && Not[LinearMatchQ[{u,v},x]]
```