```
linorder_lt_neg  THM

⊢  ∀R:(T→T→Prop).
|  (∀x,y:T. Dec(R(x,y)))
|  ⇒
|  Linorder(T;x,y.R(x,y))
|  ⇒
|  (∀a,b:T. ¬strict_part(x,y.R(x,y);a;b) ⟺ R(b,a))
| by RepD THEN ARepD ["compound";"basic"] THEN Unfold ‘strict_part‘ 0
|
1. T : Type
2. R : T→T→Prop
3. ∀x,y:T. Dec(R(x,y))
4. ∀a:T. R(a,a)
5. ∀a,b,c:T. R(a,b) ⇒ R(b,c) ⇒ R(a,c)
6. ∀x,y:T. R(x,y) ⇒ R(y,x) ⇒ x = y
7. ∀x,y:T. R(x,y) ∨ R(y,x)
8. a : T
9. b : T
⊢  ¬(R(a,b) & ¬R(b,a)) ⟺ R(b,a)
  by (Unfold ‘decidable‘ 3 THEN InstHyp [b;a] 3)
     THEN
     (InstHyp [a;b] 7)
     THEN
     ProveProp
END
```