```
decidable__divides  THM

⊢  ∀a,b:ℤ. Dec(a | b)  by UnivCD
|
1. a : ℤ
2. b : ℤ
⊢  Dec(a | b)  by Decide (a = 0)
|
|\
| 3. a = 0
| ⊢  Dec(a | b)  by Unfold ‘decidable‘ 0 THEN Decide (b = 0)
| |
| |\
| | 4. b = 0
| | ⊢  a | b ∨ ¬a | b
| |   by (DNth 1 0) THEN (HypSubst 3 0) THEN (HypSubst 4 0)
| |      THEN
| |      (BackThru Thm* ∀a:ℤ. a | a    {divides_reflexivity})
| |
| .\
| . 4. ¬b = 0
| . ⊢  a | b ∨ ¬a | b  by (DNth 2 0) THEN (Analyze 0)
| . |
| . 5. a | b
| . ⊢  False
| .   by (HypSubst 3 5)
| .      THEN
| .      (FwdThru Thm* ∀a:ℤ. 0 | a ⇒ a = 0    {zero_divs_only_zero}
| .       [5])
|
.\
. 3. ¬a = 0
. ⊢  Dec(a | b)
. | by Using [‘A’,((b rem a) = 0)]
. |    (BackThru
. |     Thm* Dec(A) ⇒ (A ⟺ B) ⇒ Dec(B)
. |     {iff_preserves_decidability})
. |
. |\
. | ⊢  Dec((b rem a) = 0)  by ProveDecidable
. |
. .\
. . ⊢  (b rem a) = 0 ⟺ a | b  by InvertIff 0
. . |
. . .....assertion .....
. . ⊢  a | b ⟺ (b rem a) = 0
. .   by BackThruGenLemma
. .      Thm* ∀a:ℤ, b:ℤ^-0. b | a ⟺ (a rem b) = 0
. .      {divides_iff_rem_zero}
. .      -1
END
```