```
elim_divides  THM

⊢  ∀x:ℤ, n:ℕ+. (n | x) ⟺ (x mod n) = 0
| by UnivCD
|    THEN
|    (Inst
|     Thm* ∀a:ℤ, n:ℕ+. a = (a ÷↓ n)·n+(a mod n)    {div_floor_mod_sum}
|     [x;n])
|    THEN
|    (Unfold ‘divides‘ 0)
|
|\
| 1. x : ℤ
| 2. n : ℕ+
| 3. x = (x ÷↓ n)·n+(x mod n)
| 4. ∃c:ℤ. x = n·c
| ⊢  (x mod n) = 0
| | by ExRepD THEN (Assert (n·c = (x ÷↓ n)·n+(x mod n)))
| |
| 1. x : ℤ
| 2. n : ℕ+
| 3. x = (x ÷↓ n)·n+(x mod n)
| 4. c : ℤ
| 5. x = n·c
| 6. n·c = (x ÷↓ n)·n+(x mod n)
| ⊢  (x mod n) = 0  by ReduceMod n -1
|
.\
. 1. x : ℤ
. 2. n : ℕ+
. 3. x = (x ÷↓ n)·n+(x mod n)
. 4. (x mod n) = 0
. ⊢  ∃c:ℤ. x = n·c  by InstConcl [x ÷↓ n]
END
```