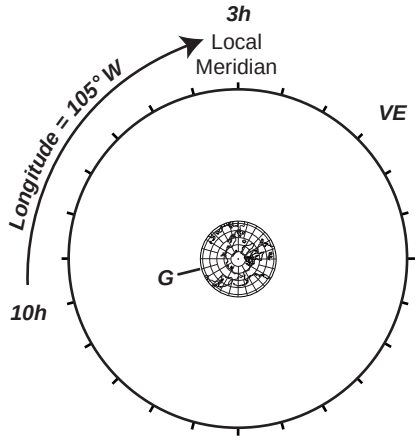
AST101: Longitude practice problems

Find the longitude of a location where the local sidereal time is 3h and the Greenwich sidereal time is 10h. Answer must be in degrees E or W.

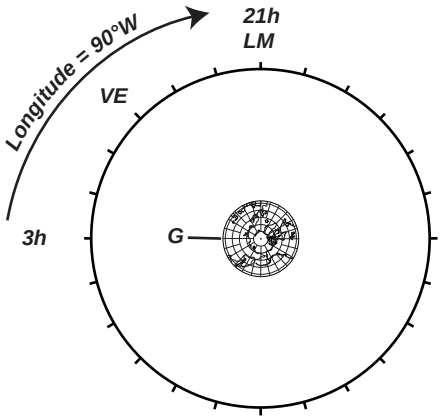
Try solving the problem using the formula provided in class as well as the "longitude wheel" below.

Longitude = LST - GST
= 3 - 10
= -7
= 7h west
= (7 x 15)° W
= 105° W



Find the local sidereal time of a location at 90°W longitude. The GST = 3h. Use the formula and wheel. Answer must be between 0 and 24 hours.

LST = GST + Longitude
= 3h + 90°W
= 3 + (-6h)
= 3 - 6
= -3h
Add 24 to convert to 0 to 24h
= 24h -3h
= 21h



Find the longitude of a place where the Local Mean (Solar) Time is 5 am and Greenwich Mean (Solar) Time is 4 pm. Use formula and wheel. Answer must be in degrees E or W.

Longitude = LMT - GMT
= 5 - 16h
= -11
= 11h west
= (15 x 11)°W
= 165°W