

RISING, SETTING, AND TIME IN THE SKY

³⁰For object at **declination δ** and observer at **latitude λ** :

RISING AND SETTING POSITIONS

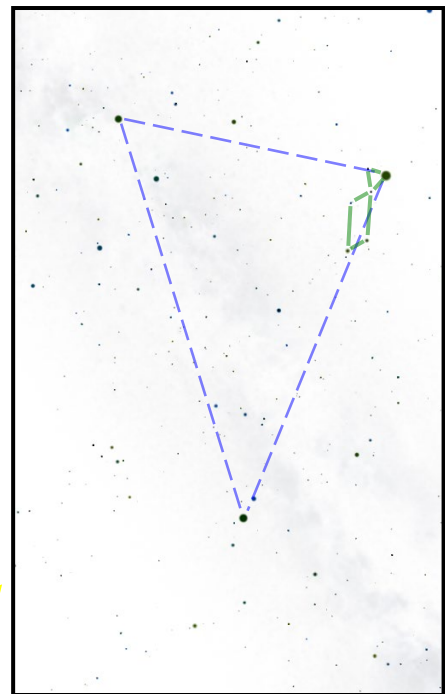
$$A_{\text{rise}} = \cos^{-1} \left(\frac{\sin \delta}{\cos \lambda} \right) \text{ degrees} \quad A_{\text{set}} = 360 - A_{\text{set}} \text{ degrees}$$

MAXIMUM ALTITUDE (AT TRANSIT)

$$\text{Alt}_{\text{Max}} = \text{Alt}_{\text{CE}} + \delta = (90 - \lambda) + \delta \text{ degrees}$$

TIME ABOVE THE HORIZON

$$\Delta t = \frac{2}{15} \cos^{-1} (-\tan \lambda \tan \delta) \text{ hours}$$



Use second worksheet to draw stick figures & label stars & constellations:¹⁶

STAR	OTHER NAME	α	δ		CANTON, NY ($\lambda = 44^{\circ}36' = 44.6^{\circ}$)			
			deg min	degrees	A_{RISE} (deg)	A_{SET} (deg)	MAX ALT.	Δt (h)
α Cyg		20 ^h 41 ^m	+45°16'					
β Cyg		19 ^h 31 ^m	+27°58'					
γ Cyg		20 ^h 22 ^m	+40°15'					
α Lyr	Vega	18 ^h 37 ^m	+38°47'	38.78°	28.4°	331.6°	84.2°	19.0
β Lyr		18 ^h 50 ^m	+33°22'					
γ Lyr		18 ^h 59 ^m	+32°41'					
α Aql		19 ^h 51 ^m	+8°52'					

Show the approximate rising path of each star below (they all rise at an angle of 45° in Canton)⁶
(They all rise parallel!)

