Class 2 - swihart - ch 1 - 1, 4, 5

1) - see class1.txt

4) $D=17$, $HA=0$, $\lambda_z = 5^h$, $\alpha(\text{Sirius}) = 6^h 43^m$

$$0 = ZT + \underbrace{.0657 \cdot 17}_{1.117 = 1^h 7^m} + (5^h - 5^h 2^m) + 6^h 37^m - 6^h 43^m$$

$$6^h 43^m + 0^h 2^m - 6^h 37^m - 1^h 7^m = ZT$$

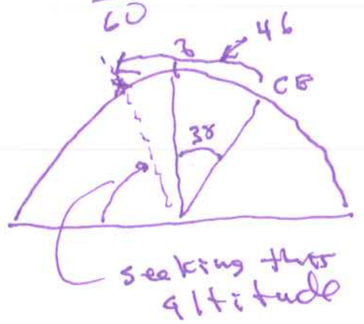
$$6^h 45^m - 7^h 44^m = -59^m = \boxed{11:01 \text{ pm}}$$

5) $D = ?$, $HA=0$, $ZT=0$, $\lambda_z = -2^h$, $\lambda = -1^h 35^m$

$$0 = 0 + .0657 \cdot D + \underbrace{(-2 + 1^h 35^m)}_{-25^m} + \underbrace{6^h 37^m - 5^h 13^m}_{1^h 24^m}$$

$$\left.\begin{array}{l} -59^m = .0657 \cdot D \\ \quad \| \\ -\frac{59}{60} \end{array}\right\} \quad D = \frac{-59}{60 \cdot .0657} = -15$$

$\boxed{\text{Dec } 16}$



Star is $46 + 52 = 98^\circ$ from S horizon
ie 8° N of Z
alt above N is 82° $(90-8)$

Online: $*T - ZT$, Aug 29 = D = 241 (google)
note: we are on daylight saving time so $\lambda_z = 5^h$

$$*T - ZT = .0657 \cdot D + (\lambda_z - \lambda) + 6^h 37^m$$

D = 241, λ_z = 5, λ = $94^\circ 23' 47'' = 6^h 18^m$

$$= \underbrace{15.833}_{15^h 50^m} \underbrace{- 1^h 18^m + 6^h 37^m}_{5^h 19^m = 5.317} = 21.15 = 21^h 9^m$$

FYI: xephem gives $9^h 13^m 49^s - \underbrace{12{:}0{:}0}_{\text{noon}} = 21^h 14^m$