EM415 Homework #8 - Answers

7.2 $\delta = 0.147$ m
$\delta t = 0.0142$ m
q" = -1300 W/m^2
τ_s = 0.084 N/m^2
q' = -5200 W/m
D = 0.336 N/m

7.14 a) h = 1019.7 W/m^{2}K
q' = 55 kW/m
b) h = 548 W/m^{2}K
q' = 29.6 kW/m
c) h = 1680 W/m^{2}K
q' = 90.7 kW/m

7.17 (Hint = Solar Insolation = $\alpha G_{abs} + \varepsilon\sigma Tsurr^4$)
h = 10.5 W/m^{2}K
Ts = 301.7 K

7.30 h = 4236.2 W/m^{2}K
Tb = 49 C

7.43 a) h = 99.4 W/m^{2}K
Ts = 347.2 C
b) t = 212 s

7.81 (ms = 592x10^{-7} Ns/m^2 @ 1300K - Not Listed in Text or EES)
a) h = 255.6 W/m2K
q = 92.5 W
b) q_dot = 1.77e8 W/m^3
Tsi = 1423 K
c) T(0) = 1791 K