MET 330 Homework 1.2
6 to 11, 13, 41, 62, 83, 90, 94

3.6. True, because absolute pressure is gage pressure plus atmosphere pressure

3.7. False, P_{atm} is dependant on elevation

3.9 and 3.4 False, the absolute pressure cannot be negative

3.10 True! because gage pressure can be negative

3.11 4000 ft = 1219 m $P_{abs} = 87.5 kPa = .864 Atm$

3.13 $P_{gauge} = P_{abs} - P_{atm}$, $P_{gauge} = 0$

3.41 $P_A = \gamma(h) + P_B$ $S_g = .90$ $h = 32 + (80 - 48) = 64$

$S_g = \frac{\gamma}{\gamma_{water}}$

$\gamma = S_g \cdot \gamma_{water} = (.90)(62.4\ lb/ft^3) = 56.2\ lb/ft^3 = .0331\ lb/in^3$

$\Delta P = .0331\ lb/in^3 \cdot 64\ in = 2.112\ lb/in^2\ (psig)$

$P_{air} = 180\ psig - 2.112\ psig = 177.9\ Psig$

3.62 $\Delta P = -(\gamma \cdot h)_m - (\gamma \cdot h)_w$ $\gamma_m = (13.54)(62.4\ lb/ft^3) = 844.896\ lb/ft^3$

$\Delta P = -(\gamma_m \cdot .075) - (\gamma_w \cdot .1)$ $\gamma_w = 62.4\ lb/ft^3 = 9802.3\ N/m^3$ $\gamma_m = 132722.6\ N/m^3$

$= (132722.6\ N/m^3 \cdot .075m) - (9802.3\ N/m^3 \cdot .1m)$

$\Delta P = -9954.2\ N/m^2 - 980.2\ N/m^2 = 10934.4\ N/m^2 = 10.934\ kPa$

3.83