P #E

Ch 12 Worksheet

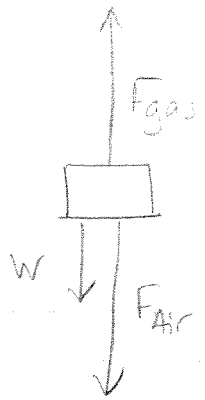
$m = 4.0\ kg$

$P_{atm} = 1.013 \times 10^5\ Pa$

$A = .015\ m^2$

$T_1 = 310\ K$

$V_1 = .00225\ m^3$
$V_2 = .003\ m^3$



a) $\frac{P_1 \cdot V_1}{T_1} = \frac{P_2 \cdot V_2}{T_2}$ $\quad \frac{(.00225\ m^3)}{310\ K} = \frac{(.003\ m^3)}{T_2}$ (P is constar

$$T_2 = 413\ K$$

b) $W = m \cdot g$
$= (4\ kg)(9.8\ m/s^2)$
$W = 39.2\ N$

$$P = \frac{F}{A} = \frac{(39.2\ N)}{.015\ m^2}$$
$$P = 2613\ Pa$$

$P = P_{atm} + 2613\ Pa$

$= (101{,}300\ Pa) + (2613\ Pa)$
$P = 103{,}913\ Pa$

For constant Pressure: $W = -P \cdot \Delta V$
$= -(103{,}913\ Pa)(.003 - .00225\ m^3)$

$$W = -78\ J$$