ENERGY PRACTICE PROBLEMS

- kWh → unit of energy

1) $P = \dfrac{E}{t}$ $t = (44 \, min)\left(\dfrac{1 \, h}{60 \, min}\right)$

$\quad\quad = \dfrac{0.0035 \, kWh}{0.73}$ $= 0.73 \, h$

$\quad\quad = 0.0048 \, kW$

$\quad\quad = 4.8 \, W$

2)

$$22500 \ MW$$

#houses

$$(22,500,000 \ kW)\left(\frac{1 \ house}{2100 \ kWh/month}\right)\left(\frac{720 \ h}{1 \ month}\right)$$

$$= 7.71 \ E6 \ houses$$

4) $P = IV$ $P = 650 \, MW$

$$V = \frac{P}{I}$$ $\underline{I} = 400 \, kA$

$$= \frac{650,000,000 \, W}{400,000 \, A}$$

$$= 1625 \, V$$

5)

$$(Emf) = NAB\omega \qquad \omega = 2\pi f$$

$$(Emf) = NAB(2\pi f)$$

$$B = \frac{(Emf)}{NA\,2\pi f}$$

$$= \frac{1200\,V}{(80)(8\,m^2)\,2\pi\,(60\,Hz)}$$

$$= 0.005\ T$$
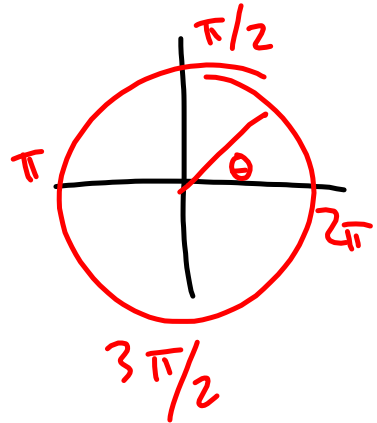
Variable	Unit
Power $\rightarrow$ P	W
Energy $\rightarrow$ E	J , kWh
Electromotive force $\rightarrow$ Emf	V
Number of Coils $\rightarrow$ N	N/A
Area $\rightarrow$ A	m^2
Magnetic field $\rightarrow$ B	T
angular frequency $\rightarrow$ w	rad/s
frequency $\rightarrow$ f	Hz $\left(\frac{1}{s}\right)$