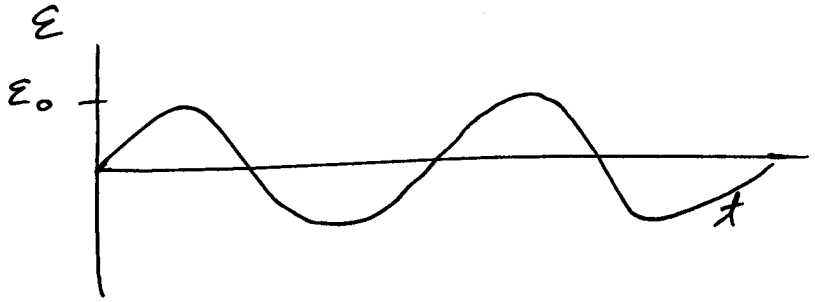
GENERATORS

$$\Phi_B = BA\cos\omega t$$

$$\mathcal{E} = \omega NBA\sin\omega t$$



$$\mathcal{E}_0 = \omega NBA$$

(GG, Ch 21, P20)

$$\mathcal{E}_0 = \omega N B A$$

$$24.0\,V = \left(120\pi\ RAD/_s\right) N \left(0.420\,T\right)\left(0.06m\right)^2$$

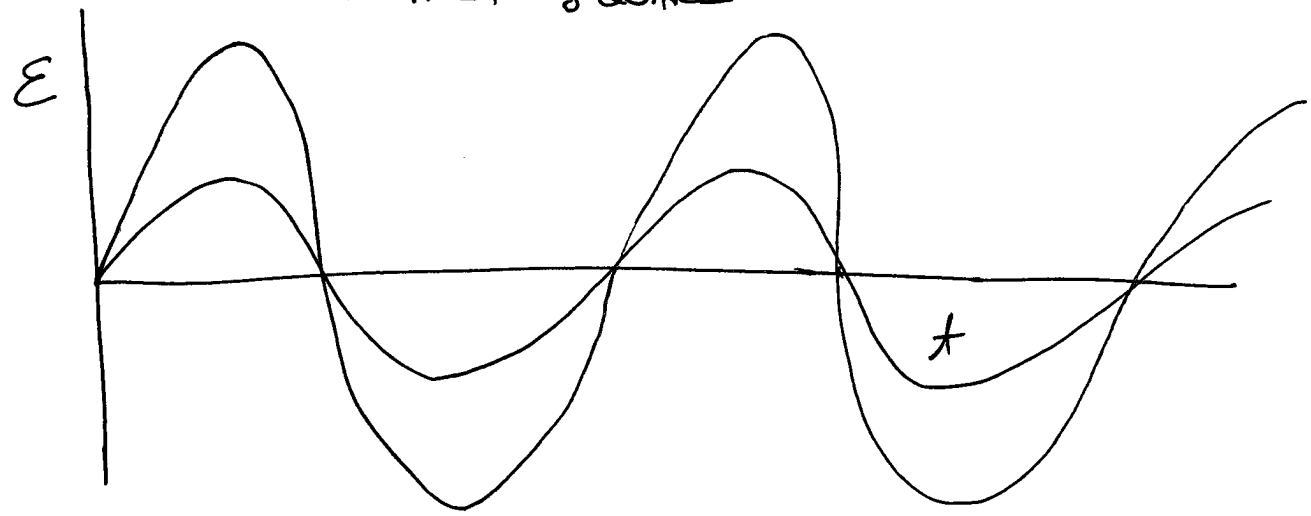
$$\omega = 60\ \frac{REV}{s} \times \frac{2\pi\ RAD}{1\ REV} = 120\pi\ RAD/_s$$

$$A = \left(0.06m\right)^2$$

$$N = 42.1$$

RMS VOLTAGE AND CURRENT

RMS = "ROOT-MEAN-SQUARE"



WANT A SINGLE NUMBER TO CHARACTERIZE THE STRENGTH OF THE VOLTAGE.

PEAK VOLTAGE $\mathcal{E}_0$ IS A GOOD CANDIDATE.

RMS VOLTAGE TURNS OUT TO BE AN EVEN BETTER NUMBER FOR SOME PURPOSES.

$$\mathcal{E}_{RMS} = \frac{\mathcal{E}_0}{\sqrt{2}}$$

(GG, Ch 21, P 24)

$$\mathcal{E}_0 = \omega N B A$$

$$= (240\pi \text{ RAD/s})(450)(0.55\text{T})\,\pi(0.04\text{m})^2$$

$$\mathcal{E}_{RMS} = \frac{\mathcal{E}_0}{\sqrt{2}} = 663 \text{ V}$$

DOUBLE THE ROTATION FREQUENCY TO DOUBLE THE RMS VOLTAGE OUTPUT.

Optics

- Study of Light

4 Theories of Light

1. Light is a Ray
   (Geometrical Optics)
2. Light is a Wave
   (Wave Optics)
3. Light is an Electromagnetic Wave
4. Light is a Quantum Field
   (Photon Theory)

GEOMETRICAL OPTICS

- MIRRORS & LENSES

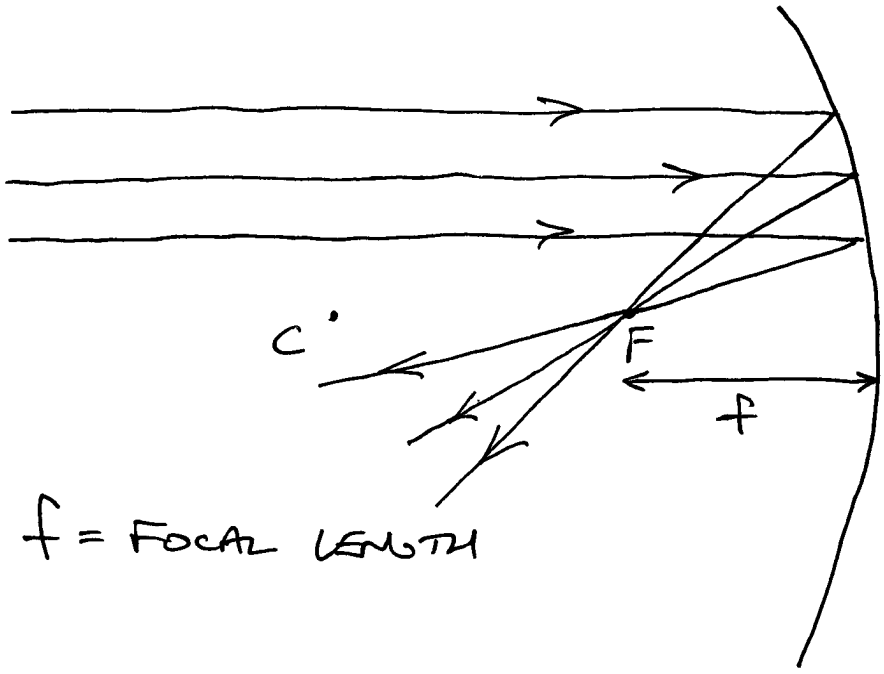
MIRRORS

FLAT MIRROR

ANGLE OF INCIDENCE EQUALS ANGLE OF REFLECTION

CURVED MIRRORS

WE WILL STUDY SPHERICAL MIRRORS



F = FOCAL POINT

f = FOCAL LENGTH