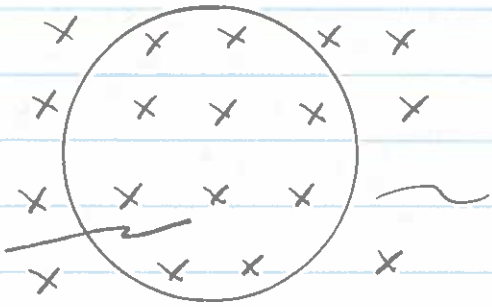
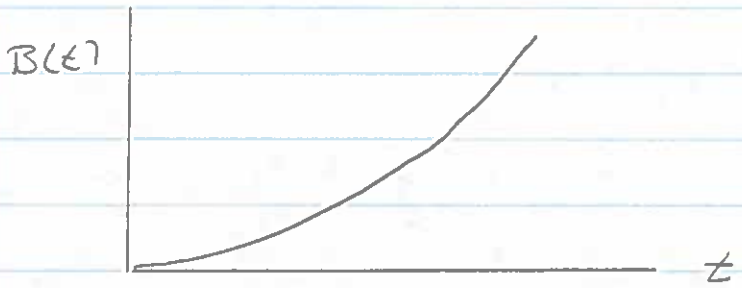


$N = 20$ turns
diameter, $d = 5\,cm$
resistance, $R = 0.5\,\Omega$

$$B(t) = 0.02t + 0.01t^2 \quad T$$
$$= at + bt^2$$

NOTE $\vec{B} \perp$ Loop
uniform



a.) Induced EMF: $\mathcal{E} = \left| \frac{d\Phi_m}{dt} \right|$

where $\Phi_m = NBA = NB\frac{\pi d^2}{4}$

Now: $\frac{d\Phi_m}{dt} = N\frac{\pi d^2}{4}\frac{dB}{dt}$

where:

$$\frac{dB}{dt} = a + 2bt$$

So: $$\mathcal{E} = N\frac{\pi d^2}{4}(a + 2bt)$$

and

$$I = \frac{\mathcal{E}}{R} = \frac{N\pi d^2}{4R}(a + 2bt)$$

b.) $I(t=5s) = 9.43 \times 10^{-3} A$

Direction Flux is increasing
$\Rightarrow$ I will induce a field to cancel original field

$\Rightarrow$ I is ccw

of the original field is as assumed.