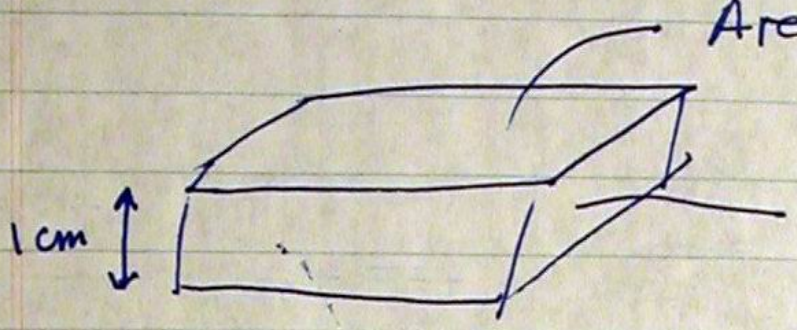
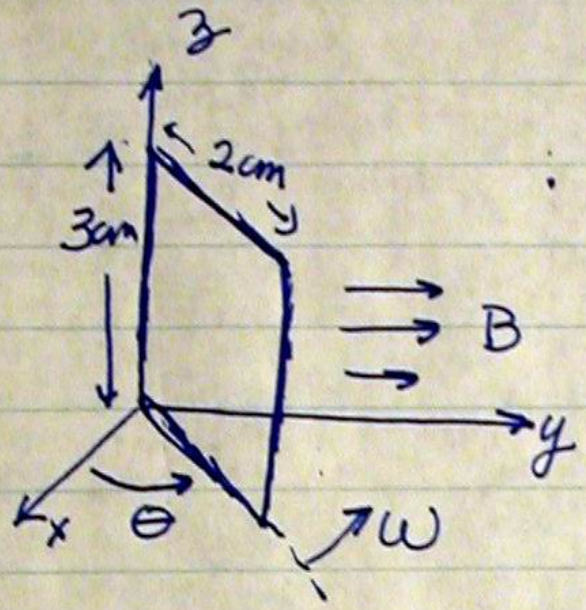


$V = 20 \cos 2\pi \times 10^6 t$

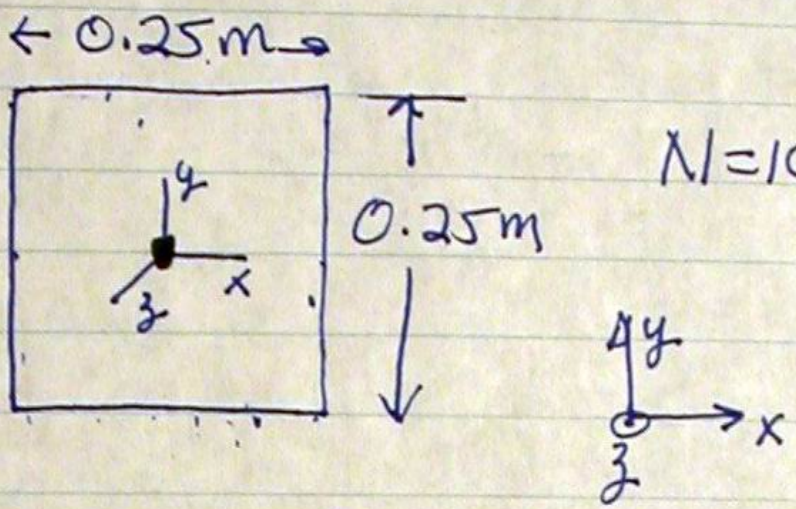
Find the displacement current.



The loop rotates at 60000 RPM in a uniform field

$B = 50\,mT\ \hat{a}_y$

Find the EMF

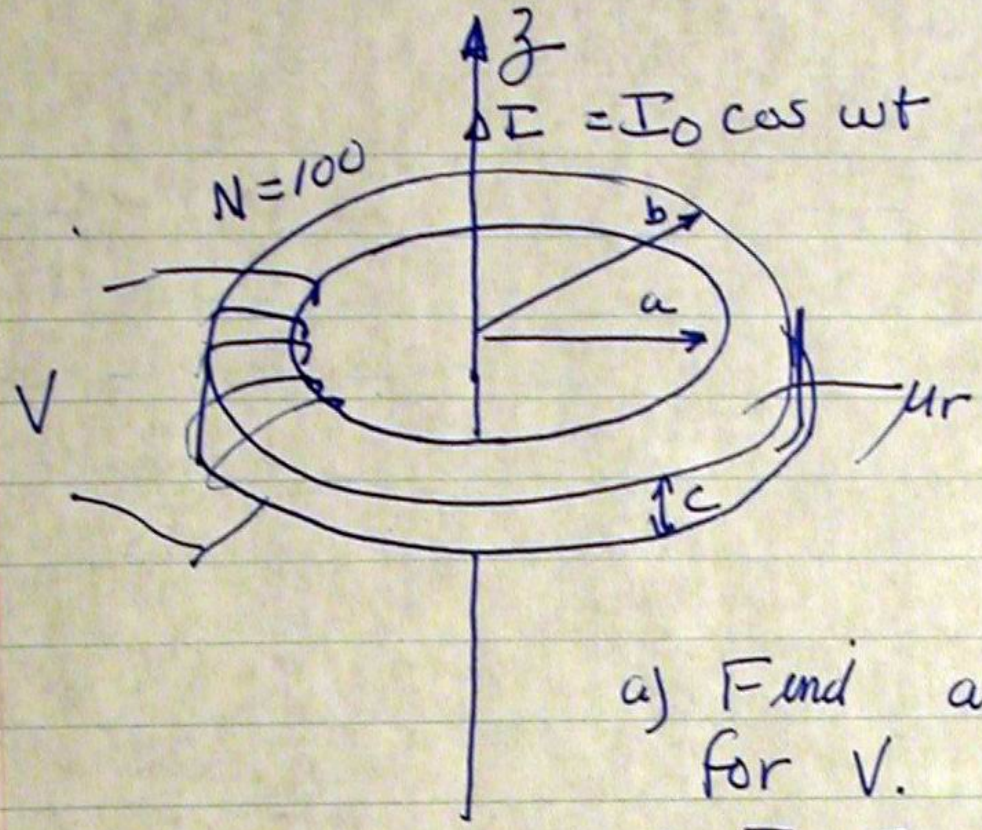


Find EMF in the coil for.

(a) $B = 10e^{-2t}\hat{a}_z$

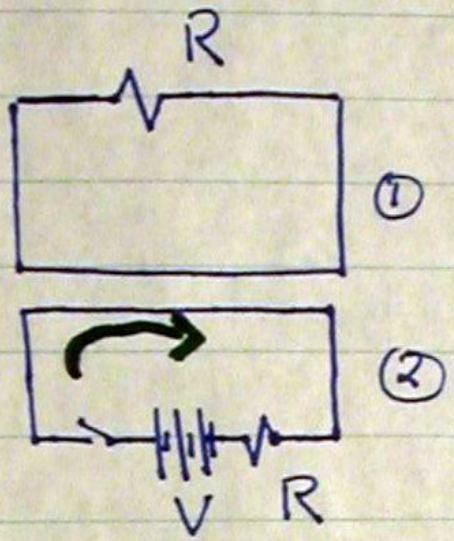
(b) $B = 10\cos x \cos 10^3 t\, \hat{a}_z$

(c) $B = 10\cos x \sin 2y \cos 10^3 t\, \hat{a}_z$



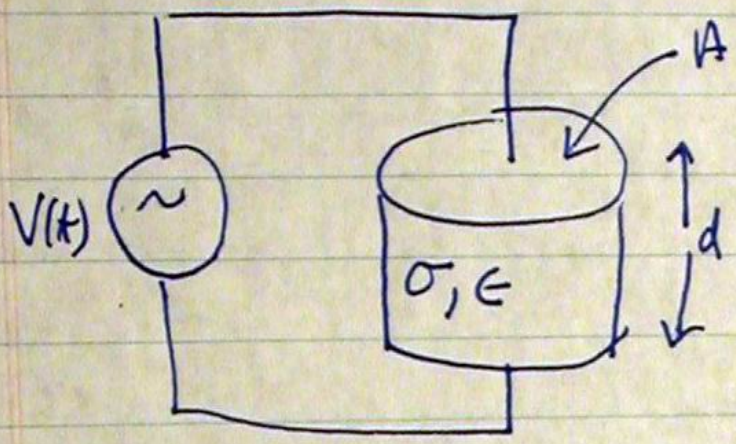
a) Find an expression for V.

b) $I_0 = 50$, $f = 60$ Hz, $\mu_r = 4000$, $a = 5$ cm, $b = 6$ cm $c = 2$ cm. Evaluate V.



The switch is closed at $t=0$. After steady state it is reopened. What is the direction of current in loop 1 just after each switching operation.

A circular TV antenna with area $0.01\ m^2$ is in a uniform 300 MHz signal. The maximum voltage obtained is 20 mV. What is the peak B?



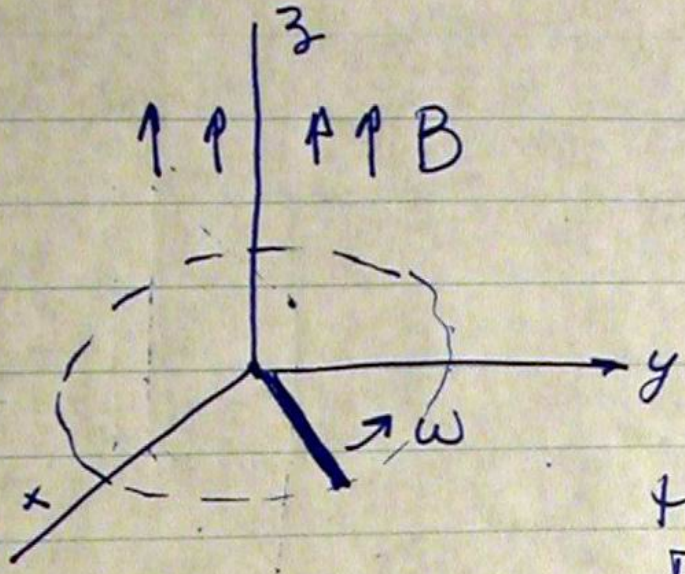
a) find an expression for $\bar{J}_c$

b) find an expression for $\bar{J}_d$

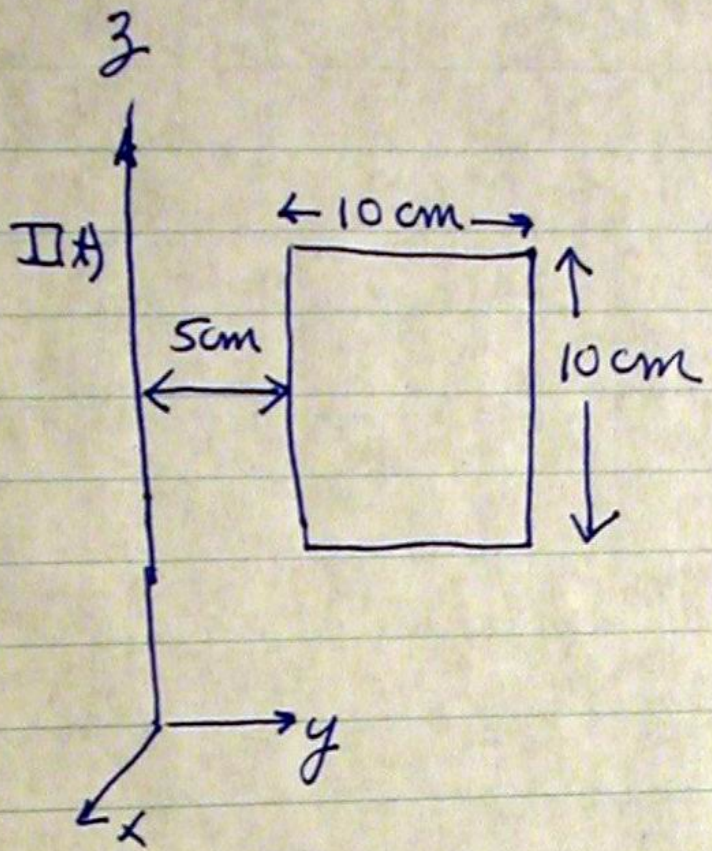
c) draw an equivalent circuit

d) $A = 2\,cm^2$, $d = 0.5\,cm$, $\epsilon_r = 4$, $\sigma = 2.5\ S/m$

$V(t) = 10\cos(3\pi \times 10^3 t)\ V$. Evaluate J_c, J_d.



a 50 cm long metal bar rotates at 180 rpm with 1 end fixed at the origin. $B = 3\times10^{-4} T\ \hat{a}_z$
Find the EMF



$i(t) = 2.5 \cos 2\pi\times10^{4} t$ A

Find the EMF.

An EM wave is propagating in sea water ($\epsilon_r = 81$, $\sigma = 4$ S/m) and is $E = E_0 \cos \omega t \, \hat{a}_z$. Find the ratio of conduction to displacement current density at 1 KHz, 1 MHz, 1 GHz. 100 GHz.

$$\frac{|\bar{J}_c|}{|\bar{J}_d|} = ?$$