

Download File PDF Walker Physics Chapter 10 Solutions

#Jenny



Finally I get this ebook, thanks for all these I can get now!

#Rio



Cool! I'am really happy

#Markus Jensen



I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook

#Hun Tsu



wtf this great ebook for free?!

#Che Salsa



My friends are so mad that they do not know how I have all the high quality ebook which they do not!

#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

(c) A wire loop lies in a horizontal magnetic field and rotates clockwise as shown in the diagram below.

At the instant shown, what is the direction of the induced magnetic field?
 At the instant shown, what is the direction of the induced current?

9. In the diagram below, we see a solenoid with loop A completely inside the solenoid and loop B completely outside the solenoid. $\omega_{\text{sol}} = 2000 \text{ rad/s}$. The radius of loop A is 5.00 cm, that of the solenoid is 8.00 cm, and that of loop B is 10.00 cm. The current in the solenoid is given by the following function of time:

$$i(t) = 5 \text{ amps} \sin(120\pi t^2)$$

The magnetic field is shown for the instant referred to in part (d) of this question.

(a) Write a formula for the voltage induced in Loop A. Substitute as many numbers as possible.

$$\mathcal{E}_{\text{ind},A} = -N \frac{d\Phi_B}{dt} = -\frac{d(\Phi_B \times N)}{dt} = -N \frac{d\Phi_B}{dt}$$

$$= -N \frac{d(B \cdot A)}{dt} = -N \frac{d(B \cdot \pi r_A^2)}{dt}$$

$$= -N \pi r_A^2 \frac{dB}{dt} = -N \pi r_A^2 \frac{d(\mu_0 n i)}{dt} = -N \pi r_A^2 \mu_0 n \frac{di}{dt}$$

$$= -N \pi r_A^2 \mu_0 n (2400\pi t) = -N \pi r_A^2 \mu_0 n (2400\pi) t$$

$$= -N \pi (0.05 \text{ m})^2 (4\pi \times 10^7) (2000) (2400\pi) t = -0.95 \text{ V} \cos(120\pi t)$$

(b) Write a formula for the voltage induced in Loop B. Substitute as many numbers as possible.

$$\mathcal{E}_{\text{ind},B} = -N \frac{d\Phi_B}{dt} = -N \frac{d(B \cdot A)}{dt} = -N \frac{d(B \cdot \pi r_B^2)}{dt}$$

$$= -N \pi r_B^2 \frac{dB}{dt} = -N \pi r_B^2 \frac{d(\mu_0 n i)}{dt} = -N \pi r_B^2 \mu_0 n \frac{di}{dt}$$

$$= -N \pi r_B^2 \mu_0 n (2400\pi t) = -N \pi r_B^2 \mu_0 n (2400\pi) t$$

$$= -N \pi (0.1 \text{ m})^2 (4\pi \times 10^7) (2000) (2400\pi) t = -0.95 \text{ V} \cos(120\pi t)$$

10. (a) Determine the reading on the ammeter in the circuit shown below if the components have the following values: EMF = 20 V, $R_1 = 2.00 \text{ k}\Omega$, $R_2 = 3.00 \text{ k}\Omega$, $R_3 = 2.26 \text{ k}\Omega$, and the meter has $R_m = 85 \Omega$.

(b) Show (by drawing) on the circuit diagram above how you would connect a voltmeter to measure the voltage across R_3 .

[Download PDF version of : Walker Physics Chapter 10 Solutions](#)