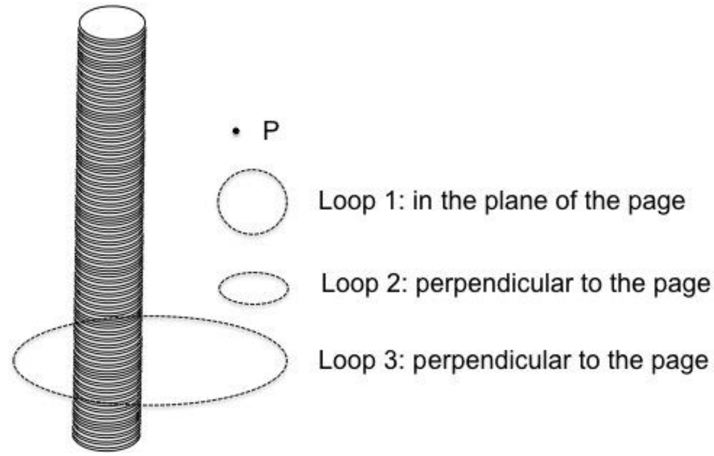
Consider an infinitely long solenoid with a time-varying B field: $B(t)=B_0+at$, $a>0$. The solenoid's "links" are perpendicular to the page (shown just slightly in perspective below). In the figure, we show a point (P) and three imaginary loops (all outside the solenoid):



From the list below, select ALL the correct statements (you may choose more than 1):

$\oint_1 \vec{E} \bullet d\vec{l} = 0$

$\oint_2 \vec{E} \bullet d\vec{l} = 0$

$\oint_3 \vec{E} \bullet d\vec{l} = 0$

E (at P)=0

NONE of the above (don't select any other than this, then!) Or, really not sure.

Please elaborate your reasoning below to the previous question.

After reading 7.2.4, how do you interpret the quantity $B^2/(2\mu_0)$? Select ALL that apply!

It represents magnetic flux

It represents magnetic flux per unit volume

It represents magnetic energy

It represents magnetic energy per unit volume

NONE of the above (don't select any other than this, then!) Or, really not sure. Explain briefly in the small space below

Take a look at Griffiths Figure 7.40.(Figure 7.41 in the 4th Edition). Asssume the circuit has been connected for a very long time when suddenly, at time t=0 switch S is thrown, bypassing the battery. What is the current flowing through the inductor L immediately after t=0?

0

(battery voltage)/R

(battery voltage)/L

(battery voltage)/(R+L)

Something entirely different! (Or, really not sure) Explain briefly in the small space below

The "phasor" treatment of AC circuits is very nifty, and the same math (basic complex number-ology) will reappear very soon in the course in other guises. For here, I want you to review complex numbers, and answer the following questions. Griffiths doesn't cover this, so if you can't remember, you'll have to dig up your old copy of Boas, or some other reference! (Or, look at my Ch 7 online notes, part 2)

If the complex number z = (1/(a - bi)) (with a and b both real),what is |z|?

1/|a+b| , 1/|a-b| , 1/Sqrt[a^2+b^2] , 1/Sqrt[a^2-b^2] , Sqrt[a^2+b^2] , Sqrt[a^2-b^2]

None of these! (Answer in space below next question)

If the complex number z = (1/(a - bi)) (with a and b both real),what is Re(z)?

a , a/Sqrt[a^2+b^2] , a/Sqrt[a^2-b^2] , a/|a+b|

None of these! (Answer in space below)

OPTIONAL: You can elaborate on either of the previous two questions below