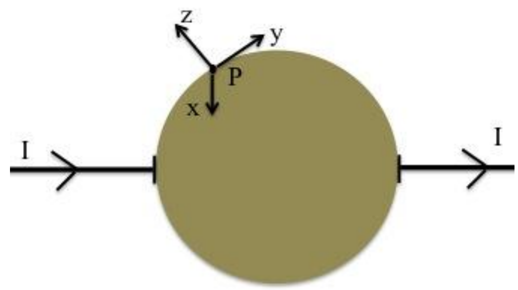
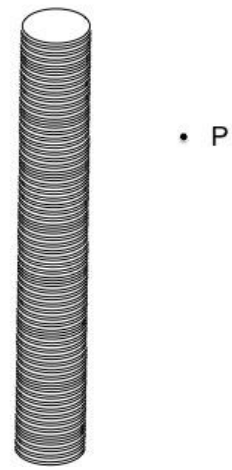
A steady current I flows through conducting wires that are connected to two metal pieces that cap the end of a blob of resistor (made with a material with uniform conductivity). What can you say about V at point P? (check all correct answers).



V=0
dV/dx=0
dV/dy=0
dV/dz=0

(Please elaborate)

Consider an infinitely long solenoid carrying a steadily increasing current I (counter-clockwise looking down from the top.) This produces a time-varying B field inside the solenoid: $B(t)=B_0+at$, $a>0$. What can you say about the E field at point P outside of the solenoid?



E is into the page
E is out of the page
E points left
E points right
E=0
E is some other direction

Please elaborate your reasoning below to the previous question.

In Griffiths 7.2.1, he moves from Eq 7.14 to 7.15 (both integral expressions) to Eq 7.16 (one of Maxwell's equations in differential form). Given what we now know (150 years after Faraday) would you say Eq. 7.14 is "derived" or is it still "experimental" (empirical) (or something else entirely?)

Eq 7.14 is precisely the same Eq 7.13, which was PROVEN! So, Eq. 7.14 is derived...
Eq 7.14 is subtly different from Eq 7.13, and it is not/cannot be proven - it's an empirical statement derived from experiment.
Something else entirely. (Tell us what, below)

Briefly, explain your reasoning for the previous question

You cannot "instantly" change the charge on a capacitor plate (and thus, the voltage across it), because it always takes some time to build up or remove charges. This physics statement is consistent with the formula "I = dQ/dt = C dV/dt" (which is simply the time derivative of Q=CV, the standard formula for a capacitor), because a discontinuous change of V (or Q) would require an infinite current. Look at Eq 7.26 (in section 7.2.3 on "Inductance") and tell me what is the equivalent story for an inductor? That is, what is it about an inductor that "cannot instantly change"? (Select ALL that apply)

Current through an inductor
Inductance (L) of an inductor
Voltage across an inductor
Charge on an inductor
EMF around any circuit containing an inductor
NONE of the above is prevented from quick changes (so, don't select any of them!)