Review of phasors: If Z = 1/(.5 + 2 i) (with appropriate SI units) which of the following are true? (Select ALL that are true)

The magnitude |Z| is greater than 1.
The magnitude of 1/Z is greater than 1
If we restrict phase to lie between -Pi and +Pi, the phase of Z is positive here.
If we restrict phase to lie between -Pi and +Pi, the phase of 1/Z is positive here
If V=I Z, in this situation, with V = V0exp[i w t] as usual, Voltage leads current
If you plotted V and I on the complex plane (in the usual way,with V = V0exp[i w t]), the V arrow would be "ahead" of the current arrow as they both rotate.
If you plotted this Z on the complex plane (in the usual way) it would lie in the lower-right quadrant.

In E&M 1, we used Ampere's law in integral form (the line integral of B dot dl around a loop is equal to mu0 times the "current through the loop"). Under what circumstances does that equation break down? (Select ALL that apply)

Under no circumstances (at least, in Classical physics)! (It is one of Maxwell's equations!)
It fails when there is a non-trivial STATIC magnetic field
It fails when there is a non-trivial STATIC electric field
It fails when there is a time VARYING magnetic field
It fails when there is a time VARYING electric field
It fails when it doesn't meet the mathematical requirement that div(curl(B))=0
It fails in any situation when symmetry is badly broken
It fails in any situation involving finite (localized) circuit elements

OPTIONAL: If you want to elaborate on the previous question, use the space below.

In Griffiths' Fig 7.42 (Fig 7.43 in the 4th edition), he shows a charging capcitor and a rather oddly shaped (bubble-like) area with, as its edge, an Amperian loop outside of the capacitor. Select ALL of the statements about that "bubble" area below which are TRUE.

That area is a CLOSED surface.
The integral of J dotted with dA through that area is ZERO
The integral of dE/dt dotted with dA through that area is ZERO
That area should not be used with Ampere's law, because (as Griffiths says), "obviously one should use a planar surface"
Ampere's law (unmodified by the Maxwell term) breaks down for that area
NONE of the above (don't select any other than this, then!) Or, really not sure. Explain briefly in the small space below

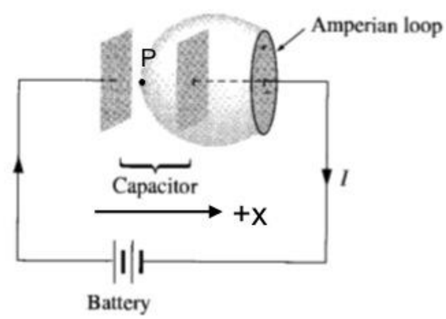

Figure 7.42

Continuing with the previous question: with our +x coordinate defined as shown above, what can you say about $(\nabla X B)_x$ at point P (shown in the figure above, it's in the empty space inside the capacitor) while the capacitor is charging up?

$(\nabla XB)x > 0$
$(\nabla XB)x < 0$
$(\nabla XB)x = 0$
I am not very sure how to figure this out

Briefly explain your reasoning to the previous questions.

Please give us a little constructive feedback. How is the course going for you? Is the tempo ok? Is the homework too easy, too hard? Are our help sessions helpful for you? Is there anything else especially helping, or especially problematic, that we should know about? (Thanks!) **especially problematic, that we should know about? (Thanks!)**