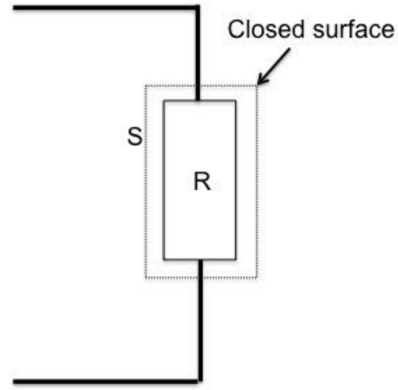
The diagram below depicts a resistor R that is connected to a battery. Given the closed surface (labeled S) surrounding the resistor (R) as indicated in the diagram, what is the sign of $\oiint$ S . dA, where S is the Poynting vector.



>0, <0, =0, or Not enough information.

(Briefly, explain)

Griffiths introduces a "complex notation" for traveling waves at the end of Ch. 9.1.2. Take a look at the last two equations in that section. I have a couple of questions about that notation, particularly the main equation: f(tilde) = A(tilde) Exp[i(kz -w t)]

What is the amplitude of that wave?
A(tilde), or |A(tilde)|, or Re[A(tilde)], or something else!

Briefly, elaborate.

Look through the rest of the next section, 9.1.3, and in particular think about the PHASE of the REFLECTED amplitude A_R(tilde). How would that phase compare with the phase of the incident wave, A_I(tilde)?

- Phases must be the same
- Phases must differ by exactly Pi
- Phases are either the same or off by Pi, it depends
- Phases could be completely independent, no clear relation w/o knowing more.
- Something else (Explain below)

Briefly, explain.

Toward the end of Griffiths 9.1.3, he said the reflected wave is "upside down". Please explain what that means (physically and mathematically)?

Same question as the previous, but think consider the phase of the *transmitted* amplitude A_T(tilde). How would that phase compare with the phase of the incident wave, A_I(tilde)?

- Phases must be the same
- Phases must differ by exactly Pi
- Phases are either the same or off by Pi, it depends
- Phases could be completely independent, no clear relation without knowing more.
- Something else! (Explain below)

Briefly, explain

Would you say that the transmitted wave is also "upside down"? Briefly, explain why, or why not, or why we cannot say.