EE 351 — Quiz #5

NAME: ________________________________

Consider an electric field given by

\[ E = (10 \hat{a}_x - 3 \hat{a}_y) e^{-0.1z} \cos(\omega t - 3z + \pi/4) \text{ V/m}. \]

Assume MKS units apply to all quantities. Answer the following questions.

1. What is the direction of propagation?

2. What are the attenuation and phase constants?

3. What is the phasor form of this field?

4. What is the distance this wave must travel to decay by a factor of one-tenth?

(over—more on back)
5. Finally, and unrelated to the previous questions, are electric and magnetic fields in phase in a lossless medium ($\sigma = 0$)? Are they in phase in a lossy medium ($\sigma \neq 0$)? Justify your answer (the justification can be very short).