From Griffiths: 5.22, 5.31, 5.34, 5.39, 5.41

1. An infinitely long and wide, nonconducting conveyor belt with a uniform charge density σ moves with a constant velocity $\vec{\mathbf{v}} = v\hat{\mathbf{z}}$ along its length.

   (a) What is the surface current density $\vec{\mathbf{K}}$ for the conveyor belt?

   (b) Find $\vec{\mathbf{A}}$ for the conveyor belt.

   (c) Use the results of part (b) to find the magnetic field of the belt. Compare your results to example 5.8 in the book.