Write down the steps, as you perceived them, for finding valid E's and B's in a waveguide.

When we take a plane wave and confine it between two parallel metal sheets, how does it change?

A) It picks up a longitudinal component

B) A velocity (either group or phase) changes

C) The wavelength changes

D) More than one of these

E) None of these/It depends

For waveguides, we usually construct a solution out of some trial function, but not every trial function is valid.

I claim $E(y)e^{i(kz-\omega t)}\hat{\imath}$ will <u>not</u> work, at least not for a non-trivial E(y). Why not?

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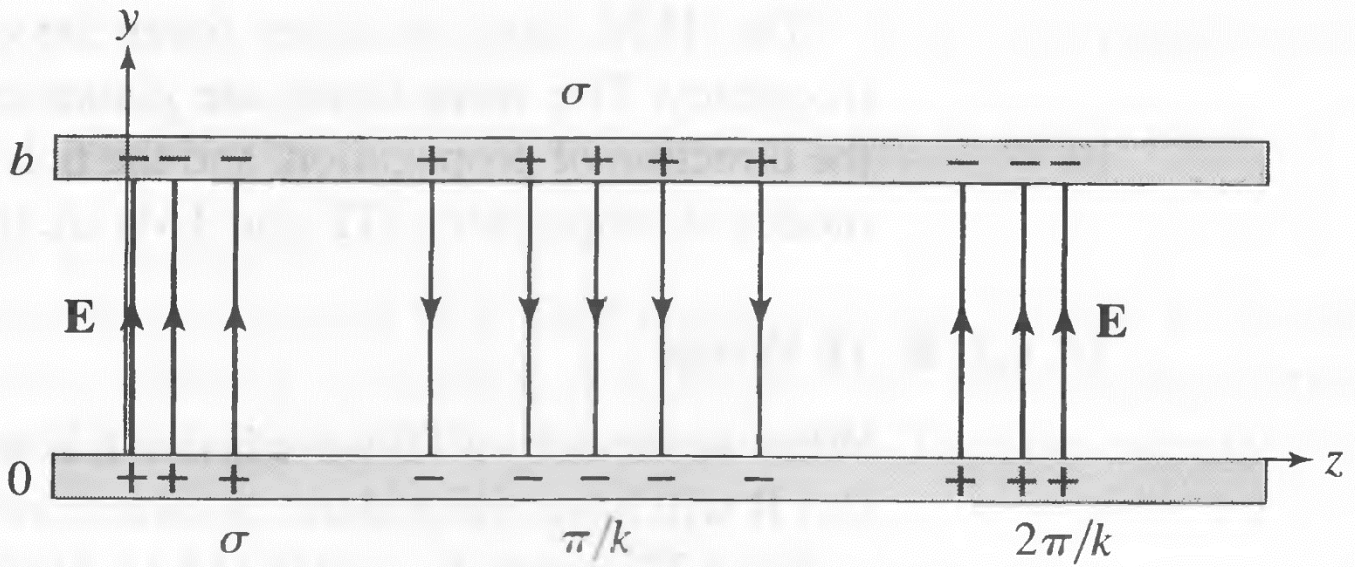
A) It's not consistent with one of the Maxwell equations (which one?)

B) We won't be able to satisfy a boundary condition (which one?) 14

Check other maxwell equations

1



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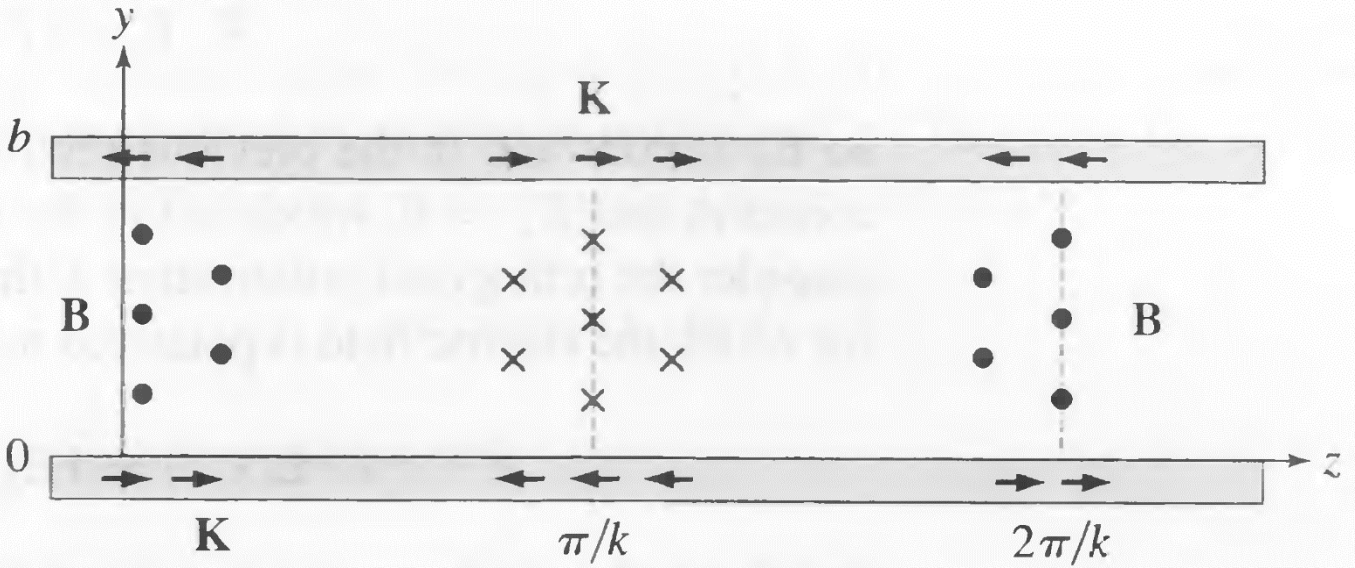
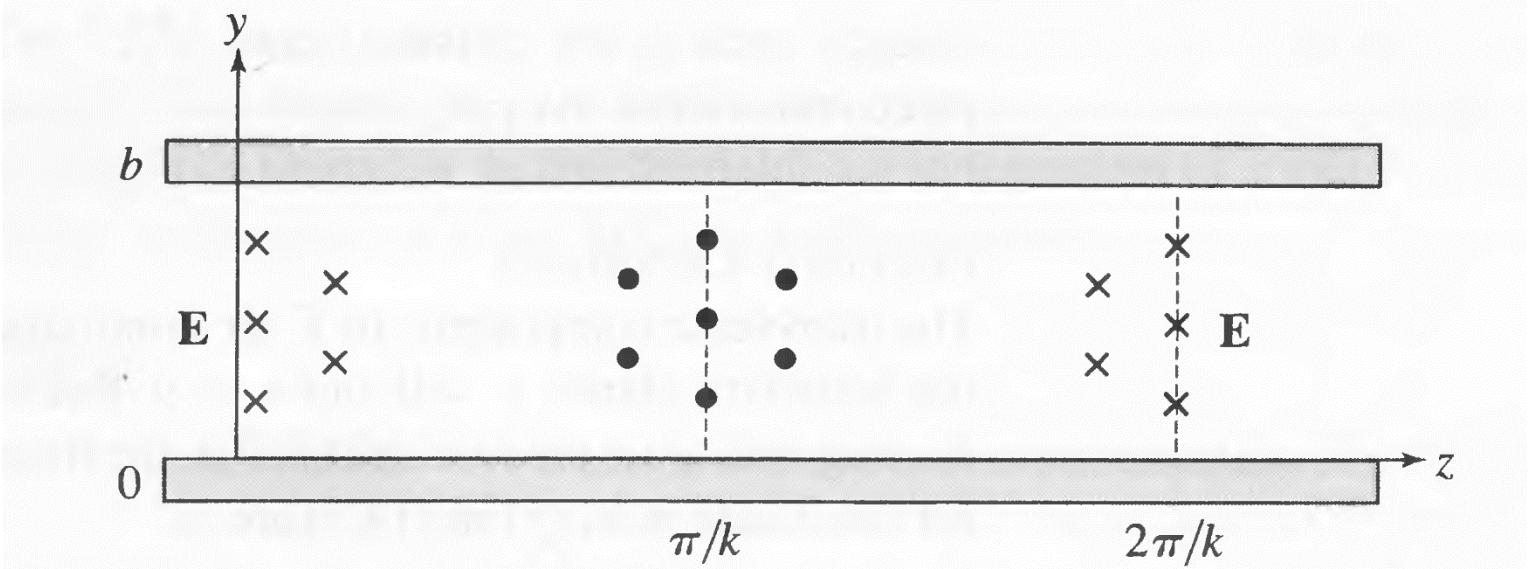
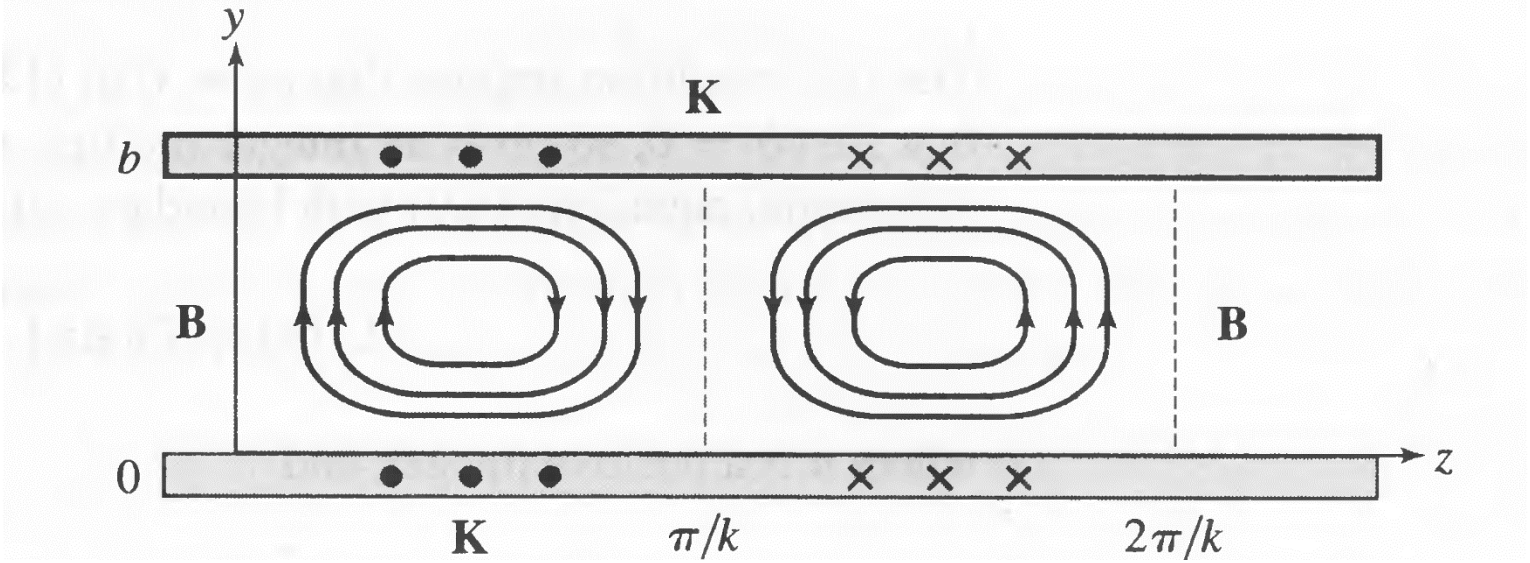
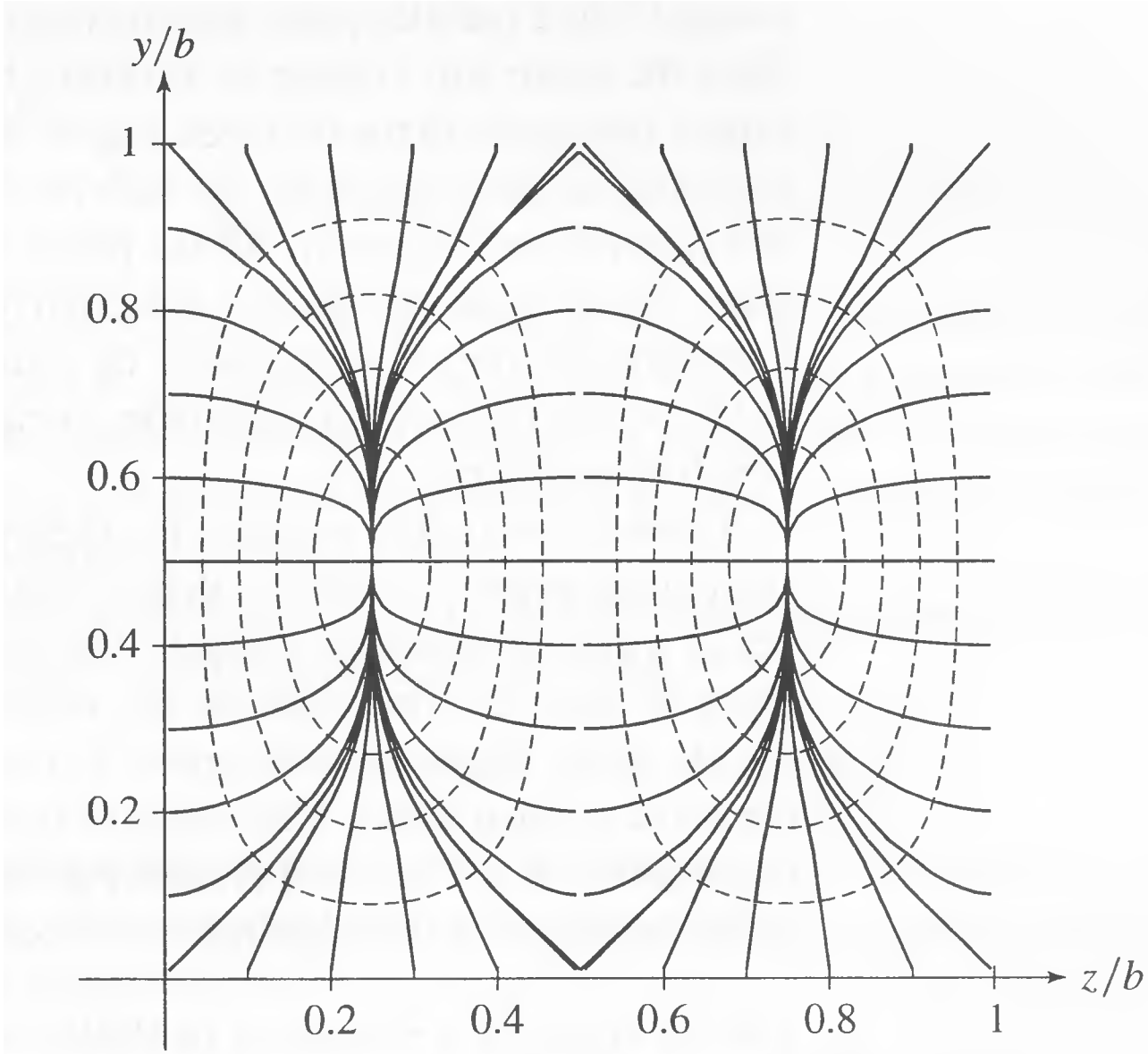
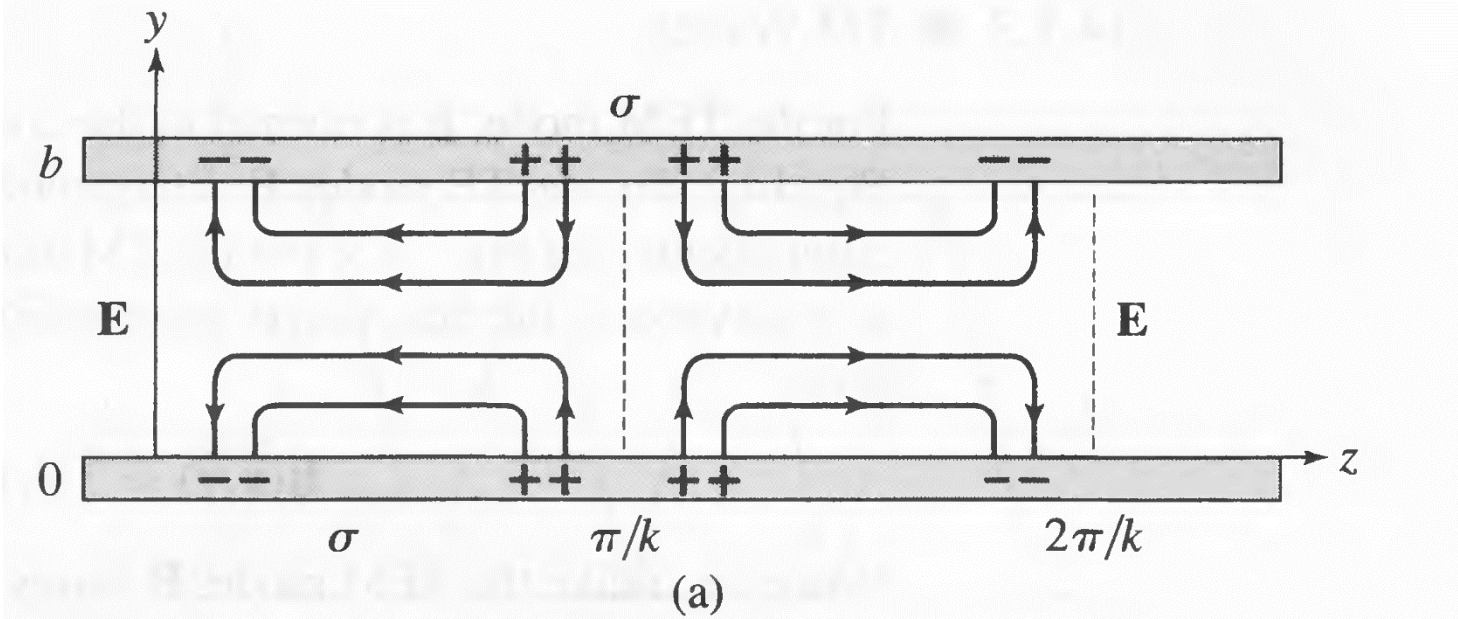




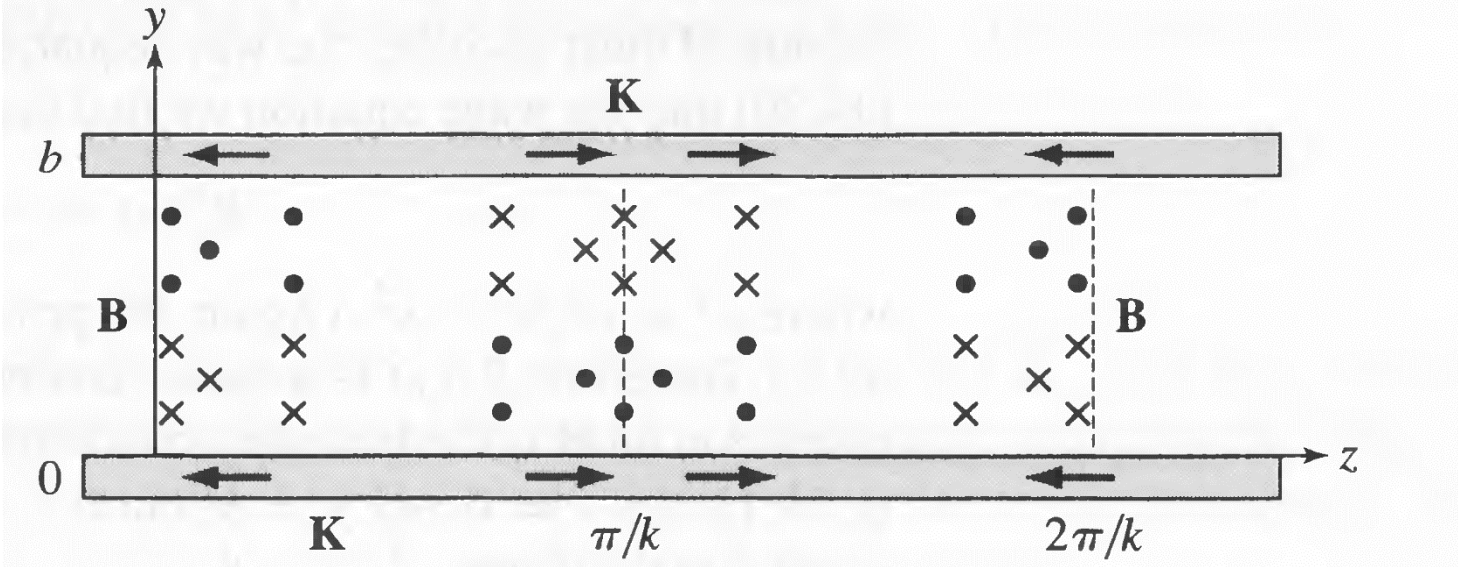
(a)

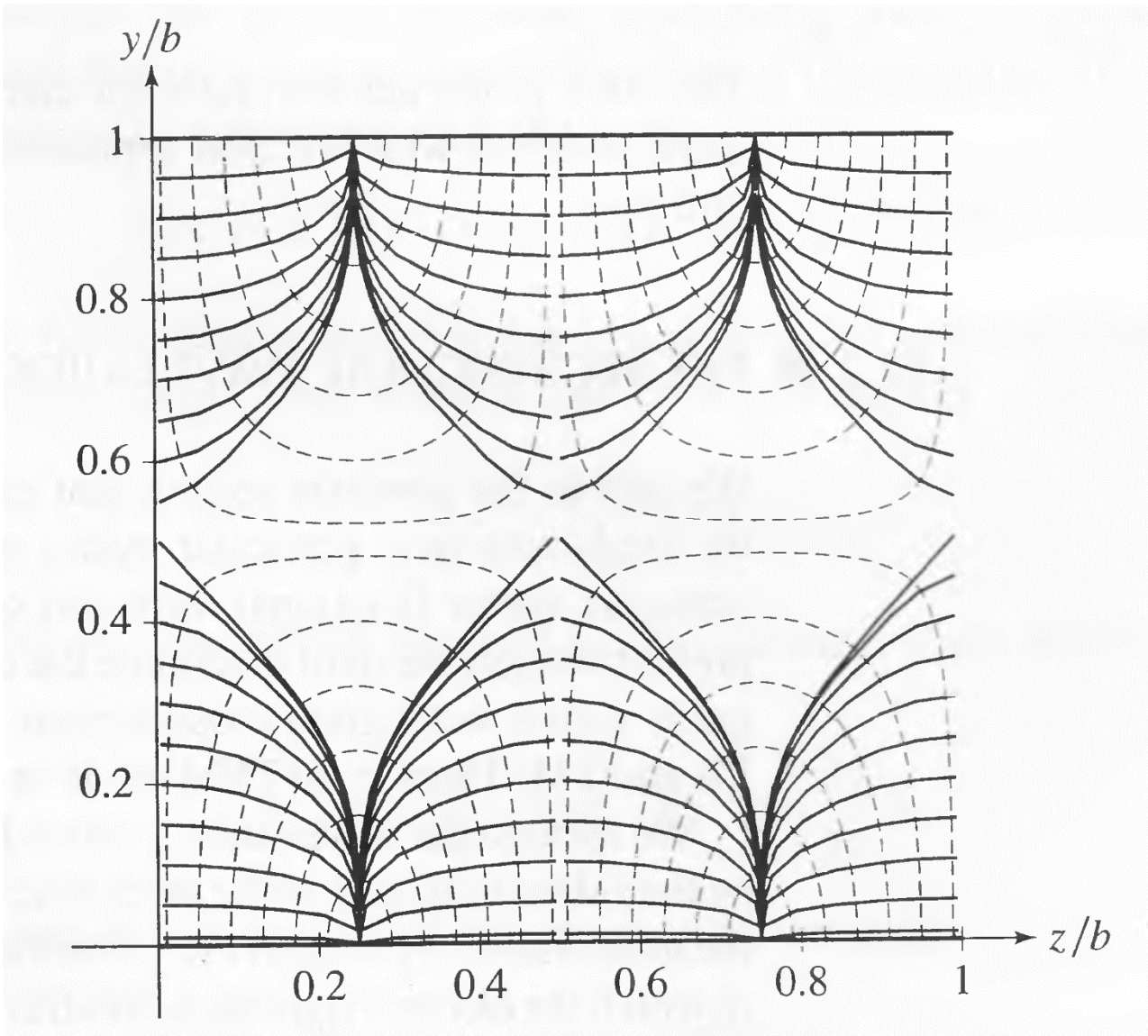



y/b
1
0.8
0.6
0.4
0.2
0.2
0.4
0.6
0.8
1
z/b



(a)




y/b
1
0.8
0.6
0.4
0.2
0.2
0.4
0.6
0.8
1
z/b