
10-23 A slab of dielectric of thickness t is inserted into a parallel plate capacitor of plate separation d and plate area A as shown in Figure 10-19. The surfaces of the slab are parallel to the plate surfaces. Find \mathbf{D} , \mathbf{E} , and \mathbf{P} as functions of x , and plot your results. (Express them in terms of Q .) Find the capacitance of this system. Verify that your result for C reduces to the proper values when $t = 0$ and $t = d$.