

- 1) Given a family F of curves $x^2 - Ky = 1$, a) show that the slopes of two lines, orthogonal to each other, are negative reciprocals, b) describe the definition of orthogonal trajectories of the given family of curves, c) find the family of orthogonal trajectories of the given family F of curves.
- 2) A 16-meter-long chain ***weighing*** ρ kg per meter hangs over a small pulley (as shown in Fig. 1.16 of the textbook), which is 20 meters above the floor. Initially, the chain is held at rest, with 7 meters on one side and 9 meters on the other side. How long after the chain is released, and with what velocity, a) as it becomes 4 meters on one side and 12 meters on the other side, b) will it leave the pulley ?
- 3) Solve the Problem 3. in *Section 1.5 Problems* of the textbook.

Good Luck ! Guys !