State Space Equation (Problems)

by

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In this Document there are two systems given, your task is to find how to choose the state variables and form their State and Output Equations.
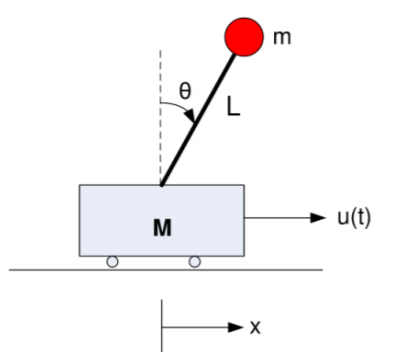
1   Inverted Cart Pendulum

Figure 1: Inverted Cart Pendulum

Consider a Cart Pendulum system. It is a horizontally moving cart with an inverted pendulum attached to it on the top.
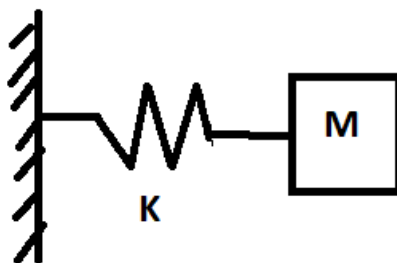
2   Spring Mass System

Figure 2: Spring Mass System

Consider a Spring mass system where a spring of spring constant k is attached to a mass M and a input u(t) is applied to right.