

## 6.3: Going From State Space to Phase Space

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Now, the momenta are the *derivatives of the Lagrangian* with respect to the velocities,  $p_i = \partial L(q_i, \dot{q}_i) / \partial \dot{q}_i$ . So, how do we get from a function  $L(q_i, \dot{q}_i)$  of positions and velocities to a function of positions and the derivatives of that function  $L$  with respect to the velocities?

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