# Notes on Noether’s theorem and conserved quantities in dynamical systems

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## Introduction

Noether’s theorem states that every differentiable symmetry of a dynamical system with conservative forces has corresponding conservation law.

Examples:

If a dynamical system behaves the same regardless of how it is oriented in space, its Lagrangian is symmetric under continuous rotation. From this symmetry, Noether’s theorem dictates that the angular momentum of the system must be conserved, as a consequence of its laws of motion.