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Bellman equation for risk-sensitive control with superlinear cost

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We consider the finite horizon risk-sensitive control problem for a system driven by a standard Brownian motion. We control the system only through the drift, the control set is unbounded, and the cost/reward function is superlinear with respect to the control variable. To solve the problem, we use the HJB theory and prove that the associated PDE admits a classical ($C^{2,1}$) solution.

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