

HW-ham-1

Exercise 32.1. Use conservation of energy to analyze the behavior of solutions to the differential equation

$$\frac{d^2x}{dt^2} = \frac{1}{(x+1)^2}$$

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Exercise 32.2. Use conservation of energy to analyze the behavior of solutions to the differential equation

$$\frac{d^2x}{dt^2} = e^{-x} - 1.$$

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Exercise 32.3. Use conservation of energy to analyze the behavior of solutions to the differential equation arising from the potential function $V(x) = x^2 - 2x + 1$.

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Exercise 32.4. Use conservation of energy to analyze the behavior of solutions to the differential equation arising from the potential function $V(x) = \frac{1}{x}$.

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Exercise 32.5. Use conservation of energy to analyze the behavior of solutions to the differential equation arising from the potential function $V(x) = \frac{1}{x} + x$.

HW-ham-6

Exercise 32.6. Use conservation of energy to analyze the behavior of solutions to the differential equation arising from the potential function $V(x) = \frac{-1}{1+x^2}$.