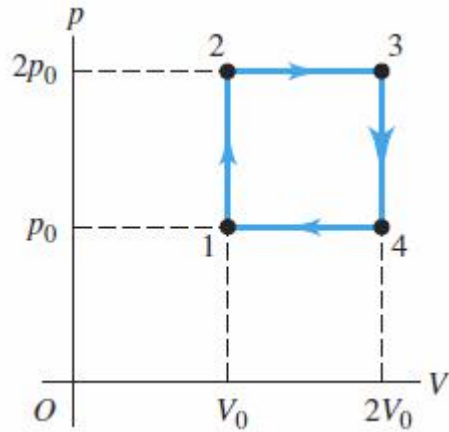


Homework 12

What is the thermal efficiency of an engine that operates by taking n moles of diatomic ideal gas through the cycle 1 2 3 4 1 in the figure:



Homework 13

A spacecraft of the Trade Federation flies past the planet Coruscant at a speed of $0.6c$. A scientist on Coruscant measures the length of the moving spacecraft to be 74.0 m . The spacecraft later lands on Coruscant, and the same scientist measures the length of the now stationary spacecraft. What value does she get?

Homework 14

An extraterrestrial spaceship is moving away from the earth after an unpleasant encounter with its inhabitants. As it departs, the spaceship fires a missile toward the earth. An observer on earth measures that the spaceship is moving away with a speed of $0.6c$. An observer in the spaceship measures that the missile is moving away from him at a speed of $0.8c$. As measured by an observer on earth, how fast is the missile approaching the earth?