NAME :

Quiz 10

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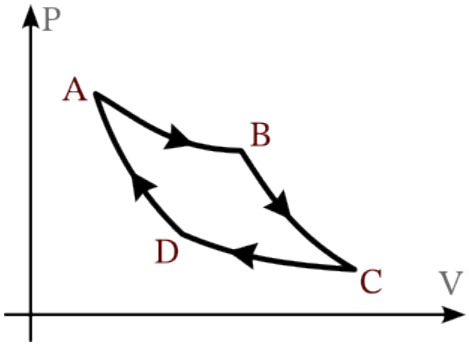
(a) An "ideal-gas" engine is taken through a Carnot cycle shown in the figure below, operating between temperatures T_h and T_c. Recall that for an ideal gas

$$PV = nRT \qquad \text{and} \qquad U = cnRT, \tag{1}$$

where the symbols have their usual meanings. Use the above equations to compute: [8]



(i) The work done along arm AB in terms of the volumes V_A and V_B, and temperature T_h.

(ii) The work done along arm CD in terms of the volumes V_C and V_D and temperature T_c.

(iii) The work done along the arms BC and DA in terms of the temperatures T_h and T_c.

(b) Now compute the heat transfer along each of the arms, using your results from part (a). [2]