

$$\begin{array}{l} x^2 - y^2 = 2 \\ x^2 + y^2 = 4 \end{array}$$

$$2x^2 = 6 \Rightarrow x = \frac{\sqrt{12}}{2} = \sqrt{3}$$

$$\Rightarrow y = 1$$

$$C = (\sqrt{3}, 1)$$

$$\begin{array}{l} x^2 - y^2 = 1 \\ x^2 + y^2 = 4 \end{array}$$

$$2x^2 = 5 \Rightarrow x = \frac{\sqrt{10}}{2} \Rightarrow y = \frac{\sqrt{6}}{2}$$

$$B = \left(\frac{\sqrt{10}}{2}, \frac{\sqrt{6}}{2} \right)$$

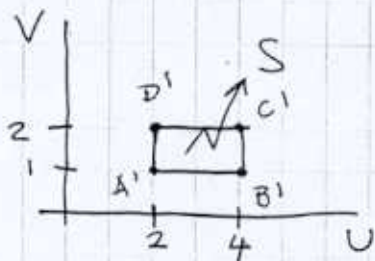
c)

$$\iint_R x^3 y^3 dA = \int_{\frac{\sqrt{6}}{2}}^{\sqrt{2}} \int_{\sqrt{2-x^2}}^{\sqrt{x^2-1}} x^3 y^3 dy dx + \int_{\sqrt{2}}^{\frac{\sqrt{10}}{2}} \int_{\sqrt{x^2-2}}^{\sqrt{x^2-1}} x^3 y^3 dy dx$$

$$+ \int_{\frac{\sqrt{10}}{2}}^{\sqrt{3}} \int_{\sqrt{x^2-2}}^{\sqrt{4-x^2}} x^3 y^3 dy dx$$

d) ~~minimize~~

$$A' = (2, 1) \quad B' = (4, 1) \quad C' = (4, 2) \quad D' = (2, 2)$$



$$\begin{array}{ll} \overline{AB} = & v = 1 \\ \overline{BC} = & u = 4 \\ \overline{CD} = & v = 2 \\ \overline{AD} = & u = 2 \end{array}$$