STA260 Tutorial 8 Question 3

$$f(y) = \frac{1}{\theta^2} y e^{-y/\theta} = e^{-y/\theta + \ln(y) + \ln(\theta^{-2})}$$

$$f(y|\theta) = e^{p(\theta)u(y) + q(\theta) + S(y)} \qquad U = \sum_{i=1}^{n} u(y_i)$$

$$p(\theta) = -1/\theta \quad u(y) = y \quad q(\theta) = \ln(\theta^{-2}) \quad S(y) = \ln(y)$$

hence, $U = \sum_{i=1}^{n} y$ is sufficient and complete

as it is part of the exponential family.