Problem # 1

Show that \{P_\theta : \theta \in \Theta\} is an exponential family

(a) \(P_\theta\) is the passion distribution \(P(\theta), \theta \in \Theta\)
(b) \(P_\theta\) is the negative binomial distribution \(NB(\theta, r)\) with a fixed \(r, \theta \in \Theta = (0, 1)\)
(c) \(P_\theta\) is the exponential distribution \(E(a, \theta)\) with a fixed \(a, \theta \in \Theta = (0, \infty)\)
(d) \(P_\theta\) is the gamma distribution \(\Gamma(\alpha, \gamma), \theta = ()\) with a fixed \(a, \theta = (\alpha, \gamma) \in \Theta = (0, \infty) \times \Theta = (0, \infty)\).

Problem # 2

Show that the family of exponential distributions \(E(a, \theta)\) with two unknown parameters \(p\) and \(r\) is not exponential family

Problem # 3

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Problem # 4

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