35. Consider a finite sample space $\mathcal{S}$ consisting of 4 equally likely outcomes; that is, $\mathcal{S} = \{\omega_1, \omega_2, \omega_3, \omega_4\}$.

(a) What is the smallest Borel field on $\mathcal{S}$ (call it $\mathcal{A}$), also called the "trivial σ-algebra"? There is no need to prove this is a Borel field.

(b) Describe, in one sentence, the power set, $\mathcal{P}_{\mathcal{S}}$ on $\mathcal{S}$. How many elements are in the power set $\mathcal{P}_{\mathcal{S}}$ of $\mathcal{S}$? Provide a listing of the sets in $\mathcal{P}_{\mathcal{S}}$.

(c) Prove that $\mathcal{P}_{\mathcal{S}}$ is a Borel field.