

Cosmology: Quiz 3
IUCAA-NCRA Graduate School
January - February 2014

- All the necessary steps must be shown. Include explanations where required.
 - The answers should be brief and to the point. Irrelevant and unnecessary statements will be penalized.
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1. Consider a fluid having equation of state $P = -\frac{A}{\rho}$. Derive an expression for $\rho(a)$ for this fluid in a FRW universe. Note that the only constant appearing in your result (apart from A) should be $\rho_0 \equiv \rho(a = 1)$.
2. Let $w = P/\rho$. What happens to w when $a \ll 1$?
3. Suppose we want $w \rightarrow -1$ as $a \rightarrow 1$. What condition should we impose on ρ_0 and A in order to achieve this?

[6+2+2]