

1) 96(6) : Cosmological Models (Cotter pp 6 of Paper 93, lect. 1)
 Here Cotter makes the important point that a geometry is entirely determined by the form of its line element. This is given by:

R. C. Tolman, "Relativity, Thermodynamics and Cosmology" (Dover, 1987 reprint).

It is shown by Cotter that the radius of the universe is infinite, it is unbounded. In this case the FLRW metric is:

$$ds^2 = e^{\nu} dt^2 c^2 + 2a dr dt - e^{\lambda} dr^2 - e^{\mu} (r^2 d\theta^2 + r^2 \sin^2 \theta d\phi^2) \quad \text{--- (1)}$$

where ν , λ and μ are functions of r and t .
 This is transformed to: --- (2)

$$ds^2 = c^2 dt^2 - \frac{e^{g(t)}}{\left(1 + \frac{\kappa}{4} r^2\right)^2} \left(dr^2 + r^2 d\theta^2 + r^2 \sin^2 \theta d\phi^2 \right)$$

where κ is constant.
What is needed in this case is to determine a form for $g(t)$ from the form of the line element.