1 The surface area of sphere **A** is nine times the surface area of sphere **B**
The difference between the volume of sphere **A** and the volume of sphere **B** is 117π cm^3

Find the radius of the smaller sphere.
Show your working clearly.

area : A : B = $9 \times 4\pi r^2 : 4\pi r^2$ (1)

scale factor of radius : A : B = $\sqrt{9} : 1$
= 3 : 1 (1)

difference in volume : $\frac{4}{3}\pi(3r)^3 - \frac{4}{3}\pi r^3 = 117\pi$ (1)

$\frac{4}{3}\pi(27r^3 - r^3) = 117\pi$

$26r^3 = \frac{117\pi}{\frac{4}{3}\pi}$

$26r^3 = 87.75$

$r^3 = \frac{87.75}{26} = 3.375$

$r = \sqrt[3]{3.375}$ (1)

$= 1.5$ (1)

1.5 ..... cm

(Total for Question 1 is 5 marks)