Condition:

A solid cone has a base radius of 4x and a height of 3x.
The total surface area of the cone is the same as the surface area of a sphere with a radius of y. Show that y = 3x.

Solution:

$S_{cone(total\ area)} = \pi \cdot r \cdot l + \pi \cdot r^2$

$l = \sqrt{(4x)^2 + (3x)^2} = \sqrt{25x^2} = 5x$

$S_{cone(total\ area)} = \pi \cdot 4x \cdot 5x + \pi \cdot (4x)^2 = 36\pi x^2$

$S_{sphere} = 4\pi R^2 = 4\pi y^2$

$S_{sphere} = S_{cone(total\ area)}$

$4\pi y^2 = 36\pi x^2$

$\sqrt{y^2} = \sqrt{9x^2}$

$y = 3x$

Answer:

$y = 3x$