**4A/B Volumes of Revolution**

A Reminder from CP1:

1. The region R is bounded by the curve with equation $y=sin2x$, the x-axis and the lines

 $x=0$ and $x=\frac{π}{2}$.

Find the volume of the solid formed when region $R$ is rotated through $2π$ radians about the x-axis.

1. The diagram shows the curve with equation $y=4lnx-1$.



**4C Revolutions with Parametrics**

1. The curve $C$ shown has parametric equations:

$$x=t\left(1+t\right),   y=\frac{1}{1+t},  t\geq 0$$

The region $R$ is bounded by the curve, the x-axis and the lines $x=0$ and $x=2$.

Find the exact volume of the solid formed when $R$ is rotated $2π$ radians about the x-axis.



**4D Modelling with Volumes of Revolution**

1. The diagram shows a model of a goldfish bowl. The cross section of the bowl is described by the curve with parametric equations:

$x=2sint, y=2cost+2, \frac{π}{6}\leq t\leq \frac{11π}{6}$

Where the units of $x$ and $y$ are in cm. The bowl is formed by rotating this curve about the y-axis to form a solid of revolution.

1. Find the volume of water required to fill the model to a height of 3cm.



1. The real bowl has a diameter of 48cm. Find the volume of water needed to fill it to the corresponding height