**Modelling with Volumes of Revolution**

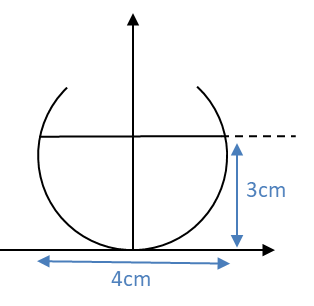
Example

The diagram shows a model of a goldfish bowl. The cross-section of the model is described by the curve with parametric equations   
, , where the units of and are in cm. The goldfish bowl is formed by rotating this curve about the -axis to form a solid of revolution.

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

The real goldfish bowl has a maximum diameter of 48cm.

(b) Find the volume of water required to fill the real goldfish bowl to the corresponding height.

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Ex4D p. 88-89