**8D Intersections**

1. The diagram shows a curve C with parametric equations:

$x=at^{2}+t$, $y=a\left(t^{3}+8\right)$, $t\in R$

Where a is a non-zero constant. Given that $C$ passes through the point (-4,0):

1. Find the value of $a$



1. Find the coordinates of the points $A$ and $B$ where the curve crosses the y-axis
2. A curve is given parametrically by the equations:

$x=t^{2}$, $y=4t$

The line $x+y+4=0$ meets the curve at A. Find the coordinates of A.

1. The curve in the diagram is given parametrically by the equations:

$x=cost+sint$, $y=\left(t-\frac{π}{6}\right)^{2}$

$$-\frac{π}{2}<t<\frac{4π}{3}$$

1. Find the point where the curve intersects the line $y=π^{2}$



1. Find the coordinates of the points A and B where the curve meets the y-axis