$\cos (A+B) = \cos A \cos B - \sin A \sin B$ 

(a) Use the above identity to show that  $2 \sin^2 A = 1 - \cos 2A$ 

(3)

(b) Hence find the value of k such that  $\sin^2 2A = k(1 - \cos 4A)$ 

(1)

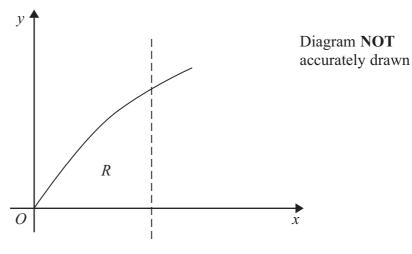


Figure 2

Figure 2 shows part of the curve with equation  $y = 3 \sin 2x$ . The region R, bounded by the curve, the positive x-axis and the line  $x = \frac{\pi}{6}$ , is rotated through  $360^{\circ}$  about the x-axis.

(c) Use calculus to find, to 3 significant figures, the volume of the solid generated.

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