9			$dx = 2\cos\theta d\theta$	**M1**	**1.1a**	Attempt to link dx and dθ	Allow sign error only
			$\int\sqrt{4-x^2}dx = \int\sqrt{4-4\sin^2\theta}.2\cos\theta d\theta$	**M1**	**3.1a**	Attempt to write integrand in terms of θ	Must substitute for both function and dx Can follow M0 but do not allow just dx = dθ
			$= \int\sqrt{4\cos^2\theta}.2\cos\theta d\theta$	**A1**	**1.1**	Obtain correct integrand in terms of cosθ only	Condone no dθ, as long as previously seen
			$= \int 4\cos^2\theta d\theta$				
			$= \int(2\cos 2\theta + 2)d\theta$	**M1**	**2.1**	Attempt use of double angle formula	Using $\cos 2\theta = \pm 2\cos^2\theta \pm 1$ Integrand must be of form $k\cos^2\theta$, which must have come from correct method with coefficient errors only
			$= \sin 2\theta + 2\theta$	**A1FT**	**1.1**	Integrate to obtain $\sin 2\theta + 2\theta$	FT on $a\cos 2\theta + b$ only
			$\left[\sin 2\theta + 2\theta\right]_{\frac{1}{6}\pi}^{\frac{1}{3}\pi} = \left(\sin\frac{2}{3}\pi + \frac{2}{3}\pi\right) - \left(\sin\frac{2}{6}\pi + \frac{2}{6}\pi\right)$ $= \left(\frac{1}{2}\sqrt{3} + \frac{2}{3}\pi\right) - \left(\frac{1}{2}\sqrt{3} + \frac{1}{3}\pi\right)$	**M1**	**2.1**	Attempt use of limits	Must be correct limits (either x or θ, as long as consistent with their integral), correct order and subtraction Allow M1 for use of limits in any integration attempt in terms of θ Allow M1 for either expressions that still involve sin, or exact equivs M0 for decimal values, even if then stated to be the same as $\frac{1}{3}\pi$ Condone eg $\frac{1}{2}\sqrt{3}$ from sin120°, but M0 if degrees used in linear term
			$= \frac{1}{3}\pi$ **A.G.**	**A1**	**2.1**	Obtain given answer of $\frac{1}{3}\pi$	Must see both surd values, or an explanation as to why $\sin\frac{2}{3}\pi = \sin\frac{2}{6}\pi$
				[7]			