Question number	Scheme	Marks
5	Triangle OBA: $\tan\left(\dfrac{\pi}{3}\right) = \dfrac{AB}{r}$	M1
	$AB = r\tan\left(\dfrac{\pi}{3}\right)$	A1
	Area of triangle $OBA = \dfrac{1}{2}r^2\tan\left(\dfrac{\pi}{3}\right)$	M1
	Area of quadrilateral $= \sqrt{3}r^2$	A1
	Area of sector $= \dfrac{1}{2}r^2 \times \dfrac{2}{3}\pi = \dfrac{\pi}{3}r^2$	M1
	Area of shaded region $= \sqrt{3}r^2 - \dfrac{\pi}{3}r^2 = 10$ oe	dM1
	$r^2 = \dfrac{10}{\sqrt{3} - \dfrac{\pi}{3}}$	M1
	$r = 3.82$	A1
		[8]

	Notes	
	Accept angles converted to degrees throughout	

M1	For $\tan\left(\dfrac{\pi}{3}\right) = \dfrac{AB}{r}$ or $\tan\left(\dfrac{\pi}{3}\right) = \dfrac{AC}{r}$
A1	For $r\tan\left(\dfrac{\pi}{3}\right)$ ($= AB$ or AC)
M1	For finding the area of either triangle OBA or $OCA = \dfrac{1}{2}r^2\tan\left(\dfrac{\pi}{3}\right)$
A1	For finding the area of the quadrilateral $= \sqrt{3}r^2$
M1	For finding the area of the sector $= \dfrac{1}{2}r^2 \times \dfrac{2}{3}\pi$
dM1	For area of quadrilateral – area of sector = 10 dependant on a reasonable attempt to find both the area of the quadrilateral and the area of the sector
M1	For solving the equation as far as $r^2 = ...$
A1	For 3.82