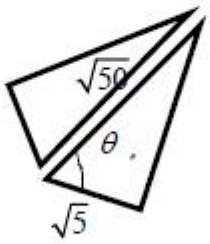
Daily Question Day 3 Mark Scheme

Question Number	Scheme	Marks
(a)(i)	$x^2+y^2-6x+2y+5=0$ Obtains $(x\pm3)^2$ and $(y\pm1)^2$	M1
	$(x-3)^2-9+(y+1)^2-1+5=0$ Obtains $(x-3)^2$ and $(y+1)^2$	A1
	Centre $=(3,-1)$	A1
(ii)	Radius$^2=\text{'}3^2+-1^2-5=5\Rightarrow r=\sqrt{5}$	M1A1
		(5)
(b)	Calculates $TQ=\sqrt{(8-3)^2+(4--1)^2}=\sqrt{50}$	M1A1
	 Uses $\cos\theta=\frac{\sqrt{5}}{\sqrt{50}}\Rightarrow\theta=1.249...$	M1A1
	angle MQN IS 2.498 radians to 3 decimal places	A1*
		(5)
(c)	Area of sector $=\text{'}\frac{1}{2}r^2\theta\text{'}=\frac{1}{2}\times\left(\sqrt{5}\right)^2\times2.498\left(=\text{awrt } 6.24/6.25\right)$	M1A1
	Area of triangle $=\text{'}\frac{1}{2}ab\sin C\text{'}=\frac{1}{2}\times\sqrt{5}\times\sqrt{50}\times\sin1.249=\left(7.50\right)$	M1
	Shaded Area $=15.0-6.245=8.76$ or 8.75	dM1,A1
		(5)
		(15 marks)