Quiz 6

Name: Key

Show *all* your work algebraically for each and simplify. No credit is given without supporting work.

1. [4] (§4.2 #29) Find the area inside the circle whose equation is

$$x^2 + y^2 - 6y = 1$$

+.5 started
+.5 kept $(6/2)^2$ balanced
+1 add $(6/2)^2$ +,
+.5 left x's alone
+.5 area of circle formula
+.5 plug in radius to area
+.5 alg

$x^2 + y^2 - 6y + \left(\frac{6}{2}\right)^2 = 1 + \left(\frac{6}{2}\right)^2$

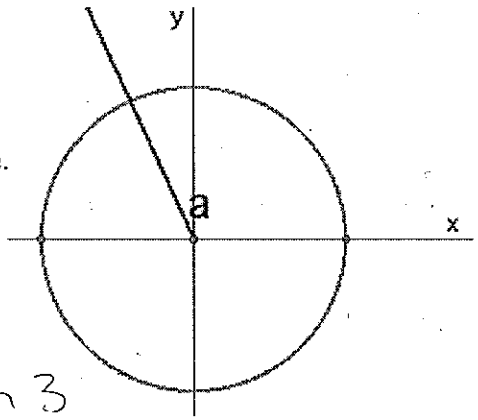
$x^2 + y^2 - 6y + 9 = 10$

$x^2 + (y-3)^2 = 10$

$\Rightarrow$ radius is $\sqrt{10}$

$\Rightarrow$ area is $\pi r^2 = \pi \cdot 10$

2. [2] (WebHW12 #1) Consider the angle pictured here. The angle a is an integer when measured in radians. Give the radian measure of the angle.



2 radians

+.5 less than 3
+.5 positive
+.5 got it

3. [3] (§5.3 #23) Suppose $\frac{\pi}{2} < \theta < \pi$ and $\sin\theta = \frac{3}{8}$. Find $\cos\theta$ exactly.

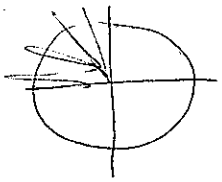
Pyth $\sin^2\theta + \cos^2\theta = 1$ (+1)

$\Rightarrow \cos^2\theta + (3/8)^2 = 1$ (+5)

$\cos^2\theta = 1 - 9/64 = 55/64$ alg (+1,5)

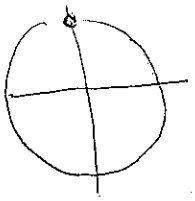
$\Rightarrow \cos\theta = \pm\sqrt{\frac{55}{64}}$ (+1,5)

$\cos\theta$ is $\frac{\sqrt{55}}{8}$ or $-\frac{\sqrt{55}}{8}$



$\Rightarrow$ cos is ~~positive~~ $-\frac{\sqrt{55}}{8}$ (+1,5) choose angle

4. [1] (§5.3 #11) Find the smallest number θ (in radians) larger than 4π so that $\cos\theta = 0$.



$\cos\frac{\pi}{2} = 0$ (+5)

$\frac{\pi}{2} + 2\pi + 2\pi = \frac{\pi}{2} + \frac{8\pi}{2} = \frac{9\pi}{2}$

1 rev another revolution

(+1,5) added whole revs

(+1) ~~get~~