AIG Circles Homework **Name:** KEY

1. What is the definition of a circle?

2. What is the standard equation for a circle? $x^2+y^2=r^2$
3. What is the standard equation for a translated circle? $(x-h)^2+(y-k)^2=r^2$

Write the standard equation for each circle. Then state the coordinates of its center and give its radius.

5. $x^2+y^2+4y=12$

$x^2+(y^2+4y+4)=16$

$x^2+(y+2)^2=16$

$c(0,-2)$ $r=4$

6. $x^2-2x+y^2=8$

$(x^2-2x+1)+y^2=9$

$(x-1)^2+y^2=9$

$c=(1,0)$ $r=3$

7. $x^2+2x+y^2+2y=2$

$(x^2+2x+1)+(y^2+2y+1)=2+1+1$

$(x+1)^2+(y+1)^2=4$

$c(-1,-1)$ $r=2$

8. $x^2+2x+y^2+6y=6$

$(x^2+2x+1)+(y^2+6y+9)=6+1+9$

$(x+1)^2+(y+3)^2=16$

$c(-1,-3)$ $r=4$

9. $x^2+y^2-10x-2y=23$

$(x^2-10x+25)+(y^2-2y+1)=49$

$(x-5)^2+(y-1)^2=49$

$c(5,1)$ $r=7$

10. $x^2+y^2-12x+6y=19$

$(x^2-12x+36)+(y^2+6y+9)=64$

$(x-6)^2+(y+3)^2=64$

$c(6,-3)$ $r=8$

11. $x^2+y^2+6x-17=0$

$(x^2+6x+9)+(y^2)=26$

$(x+3)^2+y^2=26$

$c(-3,0)$ $r=\sqrt{26}$

12. $x^2+y^2-20y+19=0$

$x^2+(y^2-20y+100)=81$

$x^2+(y-10)^2=81$

$c(0,10)$ $r=9$

13. $x^2+y^2+x+y=0$

$(x^2+x+1/4)+(y^2+y+1/4)=1/2$

$(x+1/2)^2+(y+1/2)=1/2$

$c(-1/2,-1/2)$ $r=\sqrt{1/2}$

State whether the equation is a parabola or a circle. Identify the vertex if it is a parabola and the center/radius if it is a circle.

14. $y=x^2$

Parabola

$V(0,0)$

15. $x^2=12-y^2$

Circle $\rightarrow x^2+y^2=12$

$c(0,0)$ $r=\sqrt{12}$

16. $x^2=4-(y-2)^2$

Circle $\rightarrow x^2+(y-2)^2=4$

$c(0,2)$ $r=2$

17. $(y+2)^2=15-(x-2)^2$

Circle $\rightarrow (x-2)^2+(y+2)^2=15$

$c(2,-2)$ $r=\sqrt{15}$