

# INDEX CARD #9 (BACK & FRONT)

## CIRCLES

CENTER – RADIUS FORM:  $(x - h)^2 + (y - k)^2 = r^2$

**CENTER: (H,K) TAKE THE OPPOSITE OF THE NUMBER AFTER X AND Y**

**RADIUS:  $\sqrt{r^2}$**

**TO CHANGE FROM CENTER RADIUS TO STANDARD FORM:**

1. REWRITE EACH SQUARE ( ) ( )
2. FOIL (DOUBLE DISTRIBUTE)
3. GET EVERYTHING ON ONE SIDE = 0
4. PUT IN ORDER  $Ax^2 + By^2 + Cx + Dy + E = 0$

STANDARD FORM:  $Ax^2 + By^2 + Cx + Dy + E = 0$

**TO CHANGE FROM STANDARD TO CENTER RADIUS FORM:**

1. GROUP THE XS AND THE YS AND MOVE THE # TO THE OTHER SIDE
2. COMPLETE THE SQUARE FOR THE XS THEN FOR THE YS  
FIND B  
THEN  $\frac{B}{2}$   
THEN  $(\frac{B}{2})^2$   
ADD THE  $(\frac{B}{2})^2$  TO BOTH SIDES (OF THE = SIGN)
3. REWRITE AS  $(x + \frac{B}{2})^2$  AND REPEAT FOR YS = SUM OF #S

**IF YOU DO NOT HAVE A RADIUS BUT KNOW A POINT ON THE CIRCLE**

**USE THE DISTANCE FORMULA  $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$  TO FIND THE RADIUS**