How to Graph Circles

Lets say we have the equation of a circle $(x-a)^2+(y-b)^2=r$ and we want to graph it, then preform the follwing,

1. Label the point (a,b) on your graph. (FWI, this is the centre of the circle)
2. Starting from (a,b), go to the **right** by $\sqrt{r}$ units, label the point.
3. Starting from (a,b), go to the **left** by $\sqrt{r}$ units, label the point.
4. Starting from (a,b), go to the **up** by $\sqrt{r}$ units, label the point.
5. Starting from (a,b), go to the **up** by $\sqrt{r}$ units, label the point.
6. Conect the **four** points you have labled to form a circle.

A couple of things to note,

- (a,b) represents the centre of the circle.
- $\sqrt{r}$ represents the radius of the circle (not r).

Practice Problems:

Double check your answers by using the graphing website **Desmos**.(Google it)

Question 1. Graph the following cirlces.

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

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

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

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

(e) $(x+2)^2+(x+3)^2=25$

Question 2. Write the equation of your favourite circle, then graph it.

Question 3. I am a circle with a radius of 2. My centre is unknown (yikes...). Here are some points that I lie upon,

- $(4,-4)$
- $(2,-2)$

Help me find my **centre and my equation**.

Question 4. (SUPER CHALLENGE) Prove that

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

is not a circle.