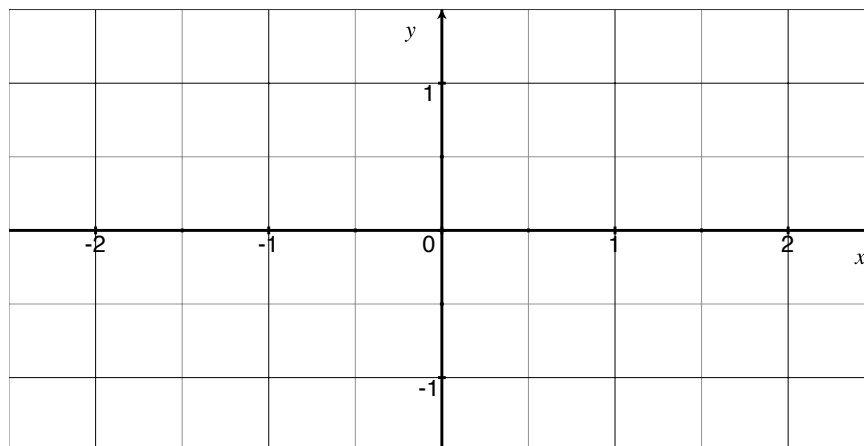# Circles & Angles

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

1. Draw the graph of $x^2 + y^2 = 1$ on the axis below

(a) Is the above the graph of a function? Why or why not?

(b) Where is the center of the above circle?

The above is called a *unit circle* because it has radius 1 (*a* unit).

2. Find the point(s) on the unit circle whose first coordinate is -1.

Recall that (x, y) is on the graph of the unit circle *when and only when* x and y satisfy the condition that $x^2 + y^2 = 1$.

3. Find the point(s) on the unit circle whose second coordinate is $\frac{3}{5}$.

Recall that (x, y) is on the graph of the unit circle *when and only when* x and y satisfy the condition that $x^2 + y^2 = 1$.

Check your answer to the previous problem by reading Example 2 on page 293.

4. Find the point(s) that are both on the unit circle and the line described by $y = x$.

5. An angle is defined with two "edges" and is measured in either degrees or radians. The convention is to place the first side of an angle on the positive horizontal axis and to draw the terminal side so that it also passes through the origin. If you need some review on angles read the introduction to §4.1 on page 279 and then draw $45°$ and $405°$ on the axes below.
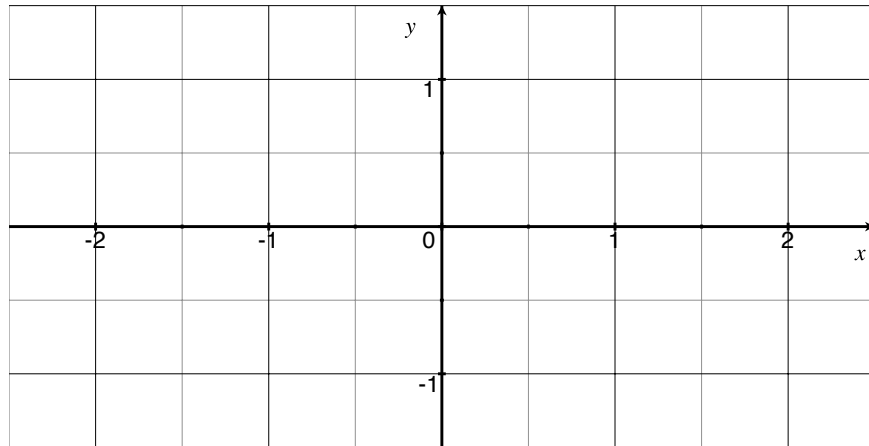
6. Angles that share both terminal sides like $0°$ and $360°$ (even though one is much larger that the other) are called co-terminal angles. Find 3 co-terminal angles to $30°$.

7. Draw the angle $-45°$.

Definition 0.1. If the unit circle is drawn with the vertex of the angle at is center, then the measure of this angle in *radians* (abbreviated 'rad') is the length of the arc that subtends the angle.