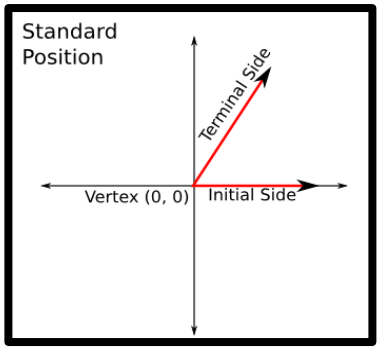
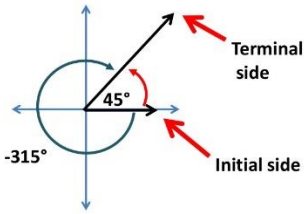
4.1 Radians and Degree Measure

Angles

- One ray (_____) is fixed, and the other ray (_____ _____) is rotated about the vertex.
- An angle is in **<u>standard position</u>** if:

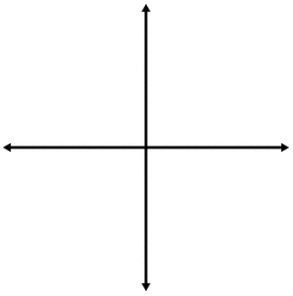


- The **<u>angle measure</u>** is:
  - <u>Positive</u> if:
  - <u>Negative</u> if:
  - The terminal side can make more than one complete rotation (they can be more than 360° or "less than" 360°)
- **<u>Conterminal angles:</u>**
  - How to find conterminal angles
    - When angles are measured in degrees:
    - When angles are measured in radians:

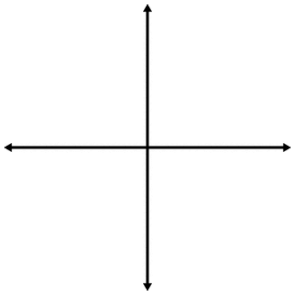


Examples: Draw the angles in standard form. Then, create and label a conterminal angle for each.

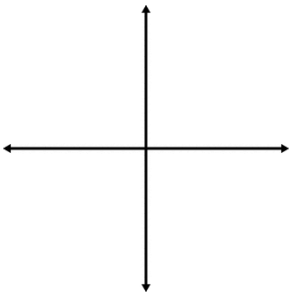
a.)



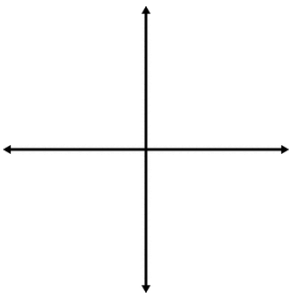
Conterminal angle:



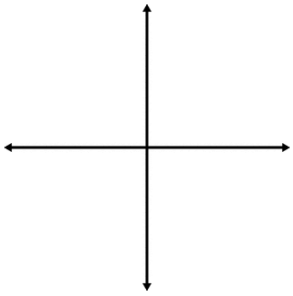
b.)



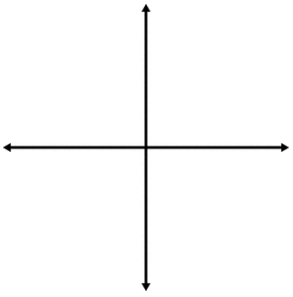
Conterminal angle:



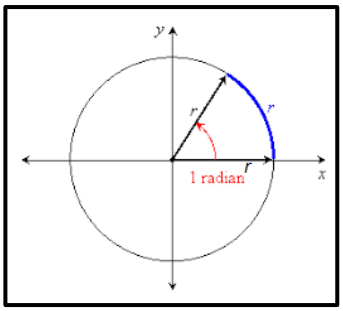
c.)



Conterminal angle:



Radians and Radian Measure



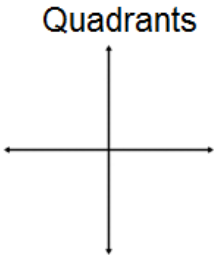
Angles can be measured in radians, as well as degrees. π is the symbol that represents radians.

- **Radian:**

- **Circumference:**

- Since $2\pi = 6.28 \rightarrow 2\pi r = 6.28r \rightarrow$ there's just over 6 radius lengths in one full circle
- One full revolution around a circle has a radian measure of 2π, and from that we can obtain:
  - $\frac{1}{2}$ revolution:
  - ¼ revolution:
  - $\frac{1}{6}$ revolution:

Degree and Degree Measure



- 360° =
- 180° =

- **Conversions between radians and degrees:**
  - Degrees to radians: Ex) Convert to radians: d.) e.)
  - Radians to degrees: Ex) Convert to degrees: f.)

Ex g) Find 3 conterminal angles for

- **Complimentary Angles:**
- **Supplementary Angles:**

Examples: Find the supplementary and complementary angles for each if they exist.

h.) i.) j.) k.)