

Notes 6.4 – Converting Values and Graphing Circles

Find the equivalent positive degree or radian less than 360° or 2π .

1. $460^\circ - 360^\circ$

$$\boxed{100^\circ}$$

2. $-480^\circ + 360^\circ + 360^\circ$

$$\boxed{240^\circ}$$

3. $+660^\circ - 360^\circ$

$$\boxed{300^\circ}$$

4. $\frac{19\pi}{6} - \frac{12\pi}{6}$

$$\boxed{\frac{7\pi}{6}}$$

5. $\frac{8\pi}{3} - \frac{6\pi}{3}$

$$\boxed{\frac{2\pi}{3}}$$

6. $\frac{15\pi}{4} - \frac{8\pi}{4}$

$$\boxed{\frac{7\pi}{4}}$$

7. $\frac{-15\pi}{4} + \frac{8\pi}{4} + \frac{8\pi}{4}$

$$\boxed{\frac{\pi}{4}}$$

8. $\frac{-13\pi}{6} + \frac{12\pi}{6} + \frac{12\pi}{6}$

$$\boxed{\frac{11\pi}{6}}$$

9. $\frac{-8\pi}{3} + \frac{6\pi}{3} + \frac{6\pi}{3}$

$$\boxed{\frac{4\pi}{3}}$$

Determine all values of θ from 0° through 360° for which:

10. $\sin\theta = 1$ 90°

11. $\cos\theta = 1$ $0^\circ, 360^\circ$

12. $\tan\theta = 1$

$45^\circ, 225^\circ$

13. $\cot\theta = 1$

$45^\circ, 225^\circ$

14. $\sec\theta = 1$ $0^\circ, 360^\circ$

15. $\csc\theta = 1$ 90°

16. $\cos\theta = -\frac{\sqrt{2}}{2}$

$135^\circ, 225^\circ$

17. $\sec\theta = -\frac{2\sqrt{3}}{3}$

$150^\circ, 210^\circ$

18. $\cot\theta = -\sqrt{3}$

$\cot\theta = -\frac{\sqrt{3}}{\frac{1}{2}}$ $150^\circ, 330^\circ$

Graphing Circles

The basic equation for a circle is $x^2 + y^2 = a$.

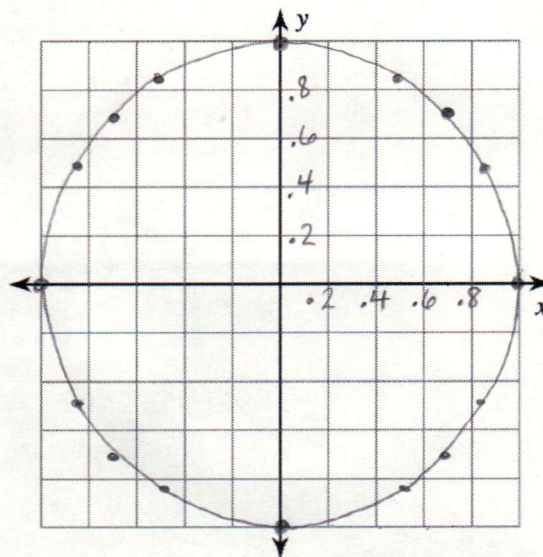
Graph the unit circle on the given graph.

The equation for the unit circle is:

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

$$\frac{\sqrt{2}}{2} = .707$$

$$\frac{\sqrt{3}}{2} = .866$$



Using Desmos, change the value of a .

What equations did you use (try at least 3)?

$$x^2 + y^2 = ?$$

$$x^2 + y^2 = ?$$

$$x^2 + y^2 = ?$$

How does changing a change the circle?

a changes the radius of the circle

A more useful version of the equation of a circle is:

$$x^2 + y^2 = r^2$$

Write the equation of a circle with a radius of 4:

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

$$4^2 = 16$$

Write the equation of a circle with a radius of $\frac{1}{2}$:

$$x^2 + y^2 = \frac{1}{4}$$

$$\left(\frac{1}{2}\right)^2 = \frac{1}{4}$$