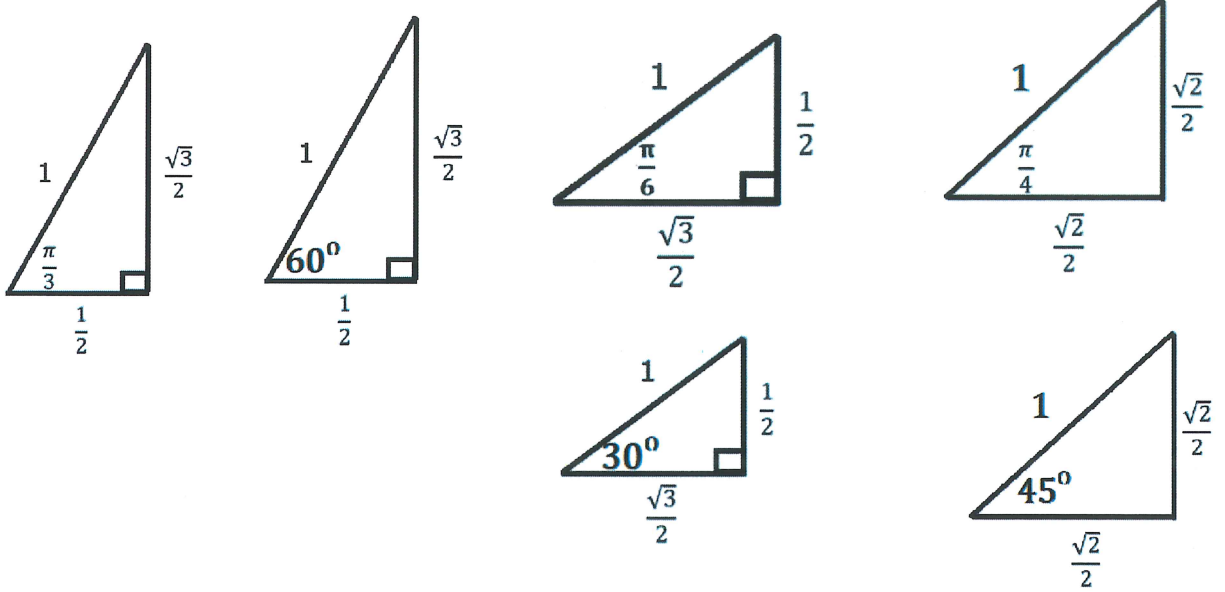
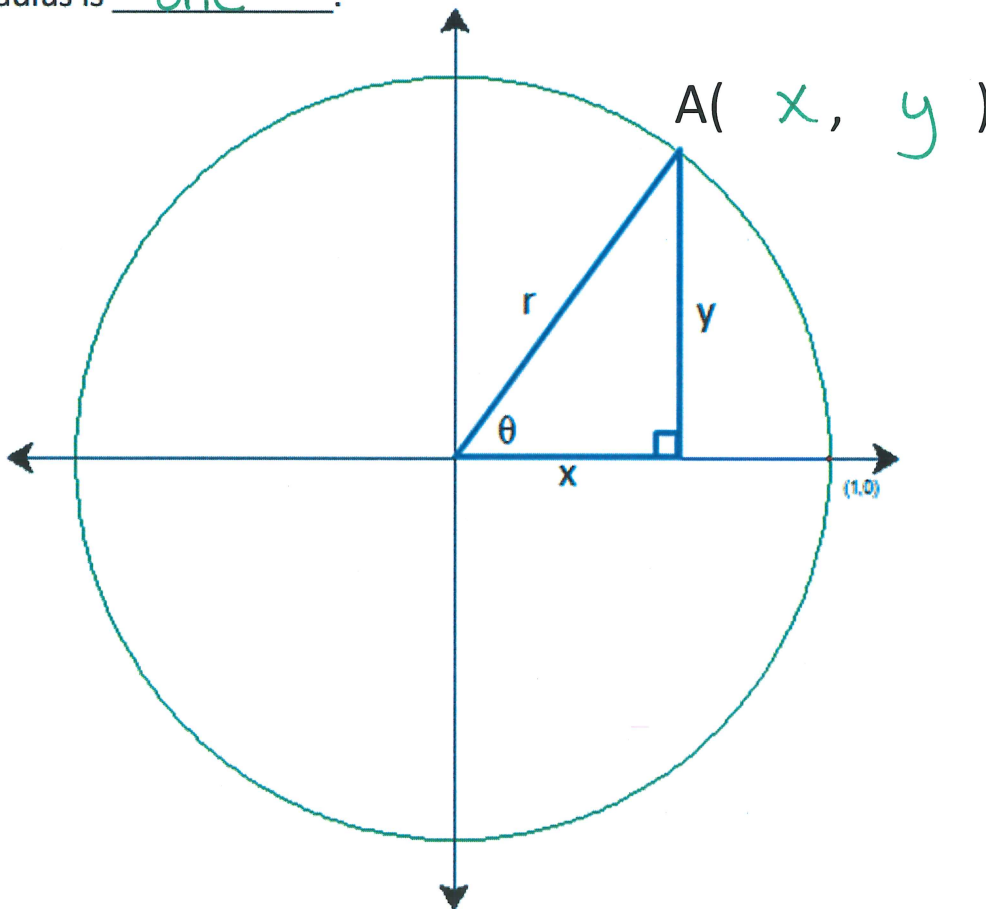


UNIT CIRCLE and Exact Values Notes 2016/2017



The circle below is called the unit circle because the value of the radius is one.



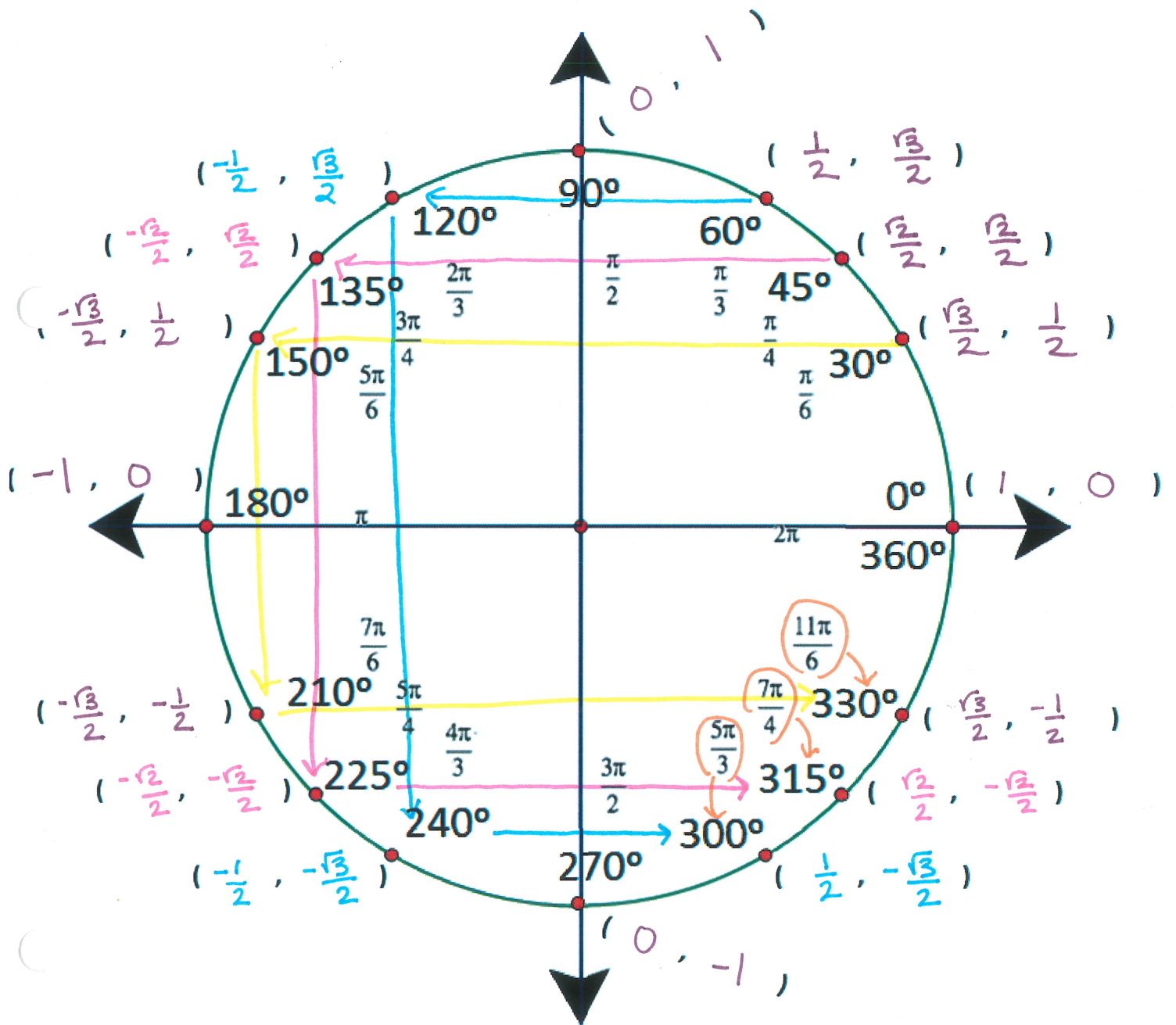
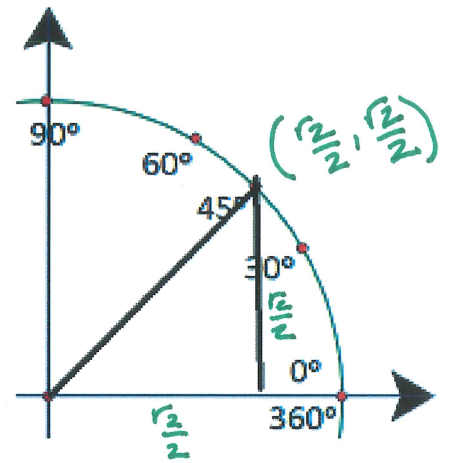
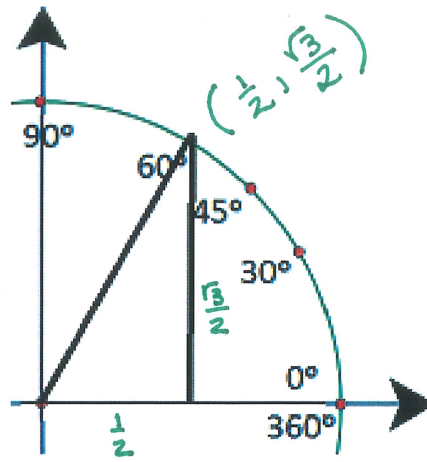
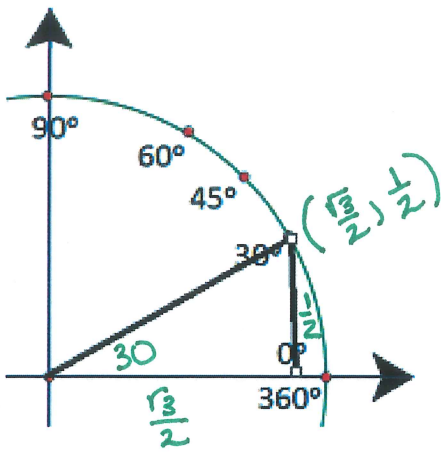
With radius= 1, find:

$$\cos\theta = \frac{x}{r} = \frac{x}{1} = x$$

$$\sin\theta = \frac{y}{r} = \frac{y}{1} = y$$

$$\tan\theta = \frac{y}{x}$$

Find all points on the unit circle using special right triangles.



UNIT CIRCLE and Exact Values Practice

Directions: Use your unit circle to find the exact values of each expression below. Show what coordinate you used for the each question. This will be considered as your work for each question.

1. $\cos \frac{\pi}{4}$ $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

2. $\sin \frac{5\pi}{6}$ $(-\frac{\sqrt{3}}{2}, \frac{1}{2})$

$\sin \frac{5\pi}{6} = \frac{1}{2}$

3. $\sin \frac{4\pi}{3}$ $(-\frac{1}{2}, -\frac{\sqrt{3}}{2})$

$\sin \frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$

4. $\sin \frac{7\pi}{4}$ $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

$\sin \frac{7\pi}{4} = -\frac{\sqrt{2}}{2}$

5. $\cos \frac{3\pi}{2}$ $(0, -1)$

$\cos \frac{3\pi}{2} = 0$

6. $\sin \frac{7\pi}{6}$ $(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$\sin \frac{7\pi}{6} = -\frac{1}{2}$

7. $\cos 2\pi$ $(1, 0)$

$\cos 2\pi = 1$

8. $\sin \pi$ $(-1, 0)$

$\sin \pi = 0$

9. $\cos \frac{11\pi}{6}$ $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$\cos \frac{11\pi}{6} = \frac{\sqrt{3}}{2}$

10. $\tan \pi$ $(-1, 0)$

$\tan \pi = \frac{0}{-1} = 0$

11. $\tan \frac{\pi}{4}$ $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

$\tan \frac{\pi}{4} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$

12. $\tan \frac{11\pi}{6}$ $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$\tan \frac{11\pi}{6} = -\frac{1}{2}$

13. $\cos 45^\circ$ $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

$\cos 45^\circ = \frac{\sqrt{2}}{2}$

14. $\sin 150^\circ$ $(-\frac{\sqrt{3}}{2}, \frac{1}{2})$

$\sin 150^\circ = \frac{1}{2}$

15. $\sin 240^\circ$ $(-\frac{1}{2}, -\frac{\sqrt{3}}{2})$

$\sin 240^\circ = -\frac{\sqrt{3}}{2}$

16. $\sin 315^\circ$ $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

$\sin 315^\circ = -\frac{\sqrt{2}}{2}$

17. $\cos 270^\circ$ $(0, -1)$

$\cos 270^\circ = 0$

18. $\sin 210^\circ$ $(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$\sin 210^\circ = -\frac{1}{2}$

19. $\cos 0^\circ$ $(1, 0)$

$\cos 0^\circ = 1$

20. $\sin 180^\circ$ $(-1, 0)$

$\sin 180^\circ = 0$

21. $\cos 330^\circ$ $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$\cos 330^\circ = \frac{\sqrt{3}}{2}$

22. $\tan 180^\circ$ $(-1, 0)$

$\tan 180^\circ = \frac{0}{-1} = 0$

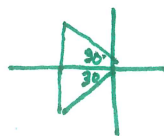
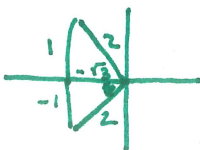
23. $\tan 45^\circ$ $(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

$\tan 45^\circ = 1$

24. $\tan 315^\circ$ $(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$

$\tan 315^\circ = -1$

25. If $\cos \theta = -\frac{\sqrt{3}}{2}$ and $\theta = \frac{b\pi}{6}$ on the unit circle, give at least one possible value for b.



$\frac{5\pi}{6}$ or $\frac{7\pi}{6}$ 😊

