

Unit circle, from *Essential Precalculus*, pg 110

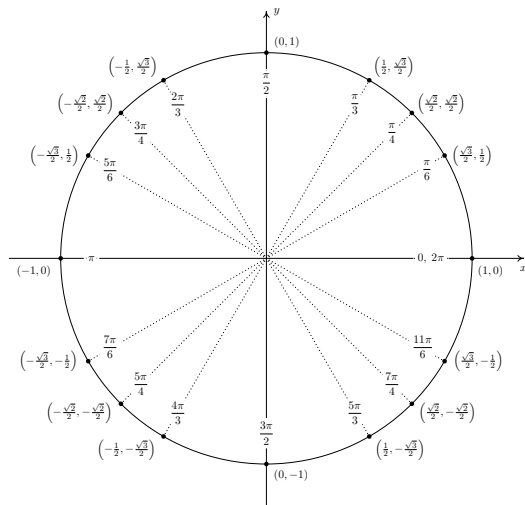


Figure 4.1.15: Important Points on the Unit Circle

Talk with the people around you for a minute

True or False: $\sin\left(\frac{\pi}{3}\right) = \frac{1}{2}$

- (a) True, and I can explain why
- (b) True, but I am unsure why
- (c) False, and I can explain why
- (d) False, but I am unsure why
- (e) Umm ...

Talk with the people around you for a minute

True or False: $\cos\left(\frac{5\pi}{6}\right) = -\frac{\sqrt{3}}{2}$

- (a) True, and I can explain why
- (b) True, but I am unsure why
- (c) False, and I can explain why
- (d) False, but I am unsure why
- (e) Umm ...

Talk with the people around you for a minute

$$\cos\left(-\frac{2\pi}{3}\right) =$$

(a) $\frac{1}{2}$

(b) $-\frac{\sqrt{3}}{2}$

(c) $-\frac{1}{2}$

(d) $\frac{2}{\sqrt{2}}$

(e) Umm ...

Talk with the people around you for a minute

$$\tan\left(\frac{5\pi}{4}\right) =$$

- (a) -1
- (b) 1
- (c) $-\frac{\sqrt{2}}{2}$
- (d) Is undefined
- (e) Umm ...

1. Use the unit circle to find the exact values of the following (no decimals!)

(a) $\sin\left(\frac{\pi}{4}\right)$

(c) $\cos\left(\frac{5\pi}{6}\right)$

(e) $\sin\left(\frac{7\pi}{3}\right)$

(b) $\cos\left(-\frac{\pi}{4}\right)$

(d) $\tan\left(\frac{5\pi}{6}\right)$

(f) $\cos\left(-\frac{5\pi}{6}\right)$

2. Find all solutions to $\cos(x)(\sin(x) - \frac{1}{2}) = 0$ where x is in the interval $[0, 2\pi]$

3. Graph $y = \sin(x)$ on the interval $[0, 2\pi]$

(a) Where is $\sin(x)$ positive? Negative? Increasing? Decreasing?

(b) Sketch the derivative of $\sin(x)$ on the same set of axes

(c) Ponder your answer to (b). Does it look familiar?