Unit circle, from *Essential Precalculus*, pg 110

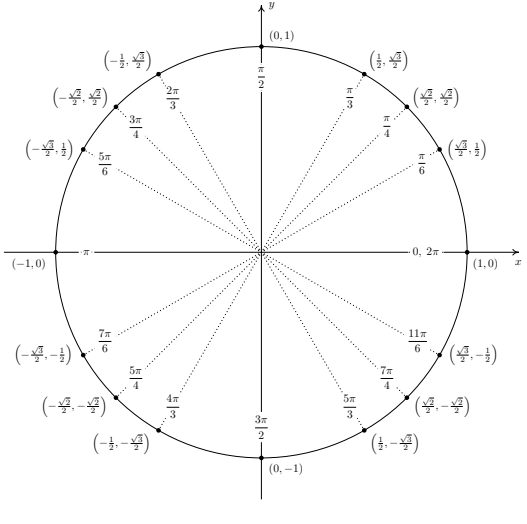


Figure 4.1.15: Important Points on the Unit Circle

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 ...

Work on these with your partner(s) at the board

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?