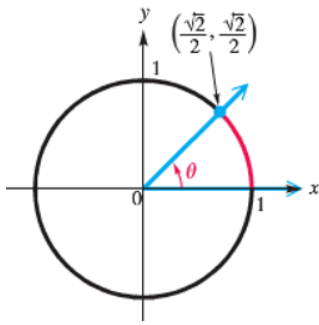


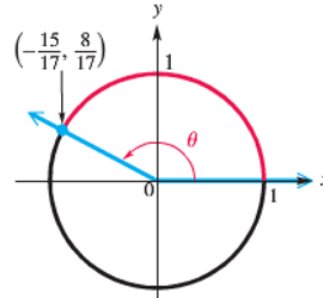
## 5.4 In-class Practice

1. Evaluate the six trigonometric functions of angle  $\theta$ , shown in the figure.

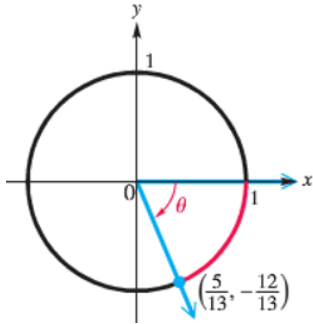
a)



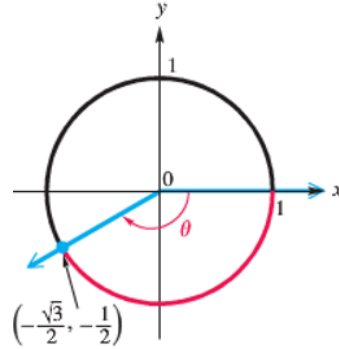
b)



a)



b)



2. Find the exact values of  $x \in [0, 2\pi)$  that satisfy the given equation.

a)  $\sin x = -\frac{\sqrt{3}}{2}$

b)  $\cos^2 x = \frac{1}{2}$

c)  $\tan^2 x = 3$

3. Finish the sentence.

a) If  $\tan \theta = 2.6$ , then  $\tan(-\theta) = \underline{\hspace{2cm}}$ .

b) If  $\cos \theta = -0.65$ , then  $\cos(-\theta) = \underline{\hspace{2cm}}$ .

c) If  $\sin \theta = \frac{2}{3}$ , then  $-\sin(-\theta) = \underline{\hspace{2cm}}$ .

4. Find  $\sin \theta$  knowing that:

a)  $\cos \theta = \frac{3}{4}$ ,  $\theta \in \text{QIV}$

b)  $\tan \theta = -\frac{\sqrt{6}}{2}$  and  $\cos \theta < 0$

c)  $\sec \theta = \frac{11}{4}$  and  $\cot \theta < 0$

d)  $\cot \theta = \frac{7}{5}$ ,  $\theta \in \text{QIII}$

5. Is  $f$  even, odd, or neither?

a)  $f(x) = \frac{1 - \cos x}{x}$

b)  $f(x) = \frac{\sin 4x}{2x}$

6. Find the exact value of the trigonometric function.

a)  $\sec \frac{17\pi}{3}$

b)  $\csc \frac{5\pi}{4}$

c)  $\cot\left(-\frac{\pi}{4}\right)$

## 5.4 In-class Practice

7. **Concept Check:** Match the expression in column I and II to complete an identity.

I	II
$\frac{\cos x}{\sin x} = \underline{\hspace{2cm}}$	A. $\sin^2 x + \cos^2 x$
$\tan x = \underline{\hspace{2cm}}$	B. $\cot x$
$\cos(-x) = \underline{\hspace{2cm}}$	C. $\sec^2 x$
$\tan^2 x + 1 = \underline{\hspace{2cm}}$	D. $\frac{\sin x}{\cos x}$
$1 = \underline{\hspace{2cm}}$	E. $\cos x$
$-\tan x \cos x = \underline{\hspace{2cm}}$	A. $\frac{\sin^2 x}{\cos^2 x}$
$\sec^2 x - 1 = \underline{\hspace{2cm}}$	B. $\frac{1}{\sec^2 x}$
$\frac{\sec x}{\csc x} = \underline{\hspace{2cm}}$	C. $\sin(-x)$
$1 + \sin^2 x = \underline{\hspace{2cm}}$	D. $\csc^2 x - \cot^2 x + \sin^2 x$
$\cos^2 x = \underline{\hspace{2cm}}$	E. $\tan x$

8. **Concept Check:** Suppose that  $\cos \theta = \frac{x}{x+1}$ . Find an expression in  $x$  for  $\sin \theta$ .

9. **Concept Check:** When is  $\sin x = -\sqrt{1 - \cos^2 x}$  a true statement?

10. Write each expression in sine and cosine, and simplify.

- |  |  |
|--|--|
| a) $\tan \theta \cos \theta$                 | b) $\sec \theta \cot \theta \sin \theta$             |
| c) $\cot^2 \theta (1 + \tan^2 \theta)$       | d) $(1 - \cos \theta)(1 + \sec \theta)$              |
| e) $\frac{1 + \tan(-\theta)}{\tan(-\theta)}$ | f) $\frac{1 - \sin^2(-\theta)}{1 + \cot^2(-\theta)}$ |
| g) $\csc \theta - \sin \theta$               | h) $\frac{\tan(-\theta)}{\sec \theta}$               |

11. Factor each expression.

- |                                |  |
|--------------------------------|--|
| a) $\sin^2 x - 1$              | b) $(\sin x + 1)^2 - (\sin x - 1)^2$       |
| c) $2 \sin^2 x + 3 \sin x + 1$ | d) $\cos^4 x + 2 \cos^2 x + 1$             |
| e) $\sin^3 x - \cos^3 x$       | f) $\sin x \tan x + \tan x - 2 \sin x - 2$ |