

1) Evaluate each of the following without the use of a calculator:

- | | |
|-----------------------------|------------------------------|
| a) $\sin (7\pi/4) =$ _____ | k) $\csc (2\pi) =$ _____ |
| b) $\cos (5\pi/3) =$ _____ | l) $\csc (-11\pi/6) =$ _____ |
| c) $\sin (\pi/6) =$ _____ | m) $\sec (5\pi/4) =$ _____ |
| d) $\cos (13\pi/6) =$ _____ | n) $\sin (7\pi/6) =$ _____ |
| e) $\tan (5\pi/3) =$ _____ | o) $\sin (-7\pi/6) =$ _____ |
| f) $\tan (5\pi/6) =$ _____ | p) $\cos (2\pi/3) =$ _____ |
| g) $\tan (5\pi/4) =$ _____ | q) $\tan (4\pi/3) =$ _____ |
| h) $\sec(-2\pi/3) =$ _____ | r) $\cos (-2\pi/3) =$ _____ |
| i) $\tan (-\pi/6) =$ _____ | s) $\sin (5\pi/3) =$ _____ |
| j) $\cot (11\pi/6) =$ _____ | t) $\cos (8\pi/3) =$ _____ |

2) Using multiples of π (i.e. radians) not degrees, find two coterminal angles for each of the following:

- | | |
|---------------------|--------------------|
| a) $5\pi/3$ _____ | d) $3\pi/4$ _____ |
| b) 2π _____ | e) $11\pi/6$ _____ |
| c) $-11\pi/6$ _____ | f) $-\pi$ _____ |

3) Solve for θ , $0 \leq \theta \leq 2\pi$ express θ in multiples of π

a) $\cos \theta = -1/2$ $\theta =$ _____

b) $\tan \theta = -1$ $\theta =$ _____

c) $\tan \theta$ is undefined $\theta =$ _____

d) $\csc \theta = -2$ $\theta =$ _____

e) $\sec \theta = -2$ $\theta =$ _____

f) $\sin \theta = -\frac{\sqrt{3}}{2}$ $\theta =$ _____

g) $\sin \theta = 1$ $\theta =$ _____

h) $\cos \theta = -1$ $\theta =$ _____

i) $\sec \theta = \frac{2}{\sqrt{3}}$ $\theta =$ _____

Answers:

1a) $-\frac{\sqrt{2}}{2}$

b) $\frac{1}{2}$

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

d) $\frac{\sqrt{3}}{2}$

e) $-\sqrt{3}$

f) $-\frac{\sqrt{3}}{3}$

g) 1

h) -2

i) $-\frac{\sqrt{3}}{3}$

j) $-\sqrt{3}$

k) *undefined*

l) 2

m) $-\sqrt{2}$

n) $-\frac{1}{2}$

o) $\frac{1}{2}$

p) $-\frac{1}{2}$

q) $\sqrt{3}$

r) $-\frac{1}{2}$

s) $-\frac{\sqrt{3}}{2}$

t) $-\frac{1}{2}$

2a) $-\frac{\pi}{3} \quad \frac{11\pi}{3}$

b) $-2\pi \quad 4\pi$

c) $\frac{13\pi}{6} \quad \frac{\pi}{6}$

d) $-\frac{5\pi}{4} \quad \frac{11\pi}{4}$

e) $\frac{23\pi}{6} \quad -\frac{\pi}{6}$

f) $\pi \quad 3\pi$

3a) $\frac{2\pi}{3} \quad \frac{4\pi}{3}$

b) $\frac{3\pi}{4} \quad \frac{7\pi}{4}$

c) $\frac{\pi}{2} \quad \frac{3\pi}{2}$

d) $\frac{7\pi}{6} \quad \frac{11\pi}{6}$

e) $\frac{2\pi}{3} \quad \frac{4\pi}{3}$

f) $\frac{4\pi}{3} \quad \frac{5\pi}{3}$

g) $\frac{\pi}{2}$

h) π

i) $\frac{\pi}{6} \quad \frac{11\pi}{6}$