1. Simplify the expression so it is free of any trig or inverse trig function. Use exact value.

a. $\sin^{-1}(0)$

b. $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$

c. $\cos^{-1}(-1)$

d. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$

e. $\tan^{-1}(-1)$

f. $\arcsin\left(\frac{1}{2}\right)$

g. $\arccos\left(-\frac{\sqrt{2}}{2}\right)$

2. Simplify the expression so it is free of any trig or inverse trig function. Use exact value.

a. $\arcsin(\sin(3\pi))$

b. $\arccos(\cos(-\frac{9\pi}{2}))$

c. $\tan^{-1}(\tan(\frac{-21\pi}{4}))$

d. $\sin^{-1}(\sin(4.579))$

e. $\cos^{-1}(\cos(-13))$

f. $\tan^{-1}(\tan(-10))$

g. $\sin^{-1}(\sin(-11.5))$

h. $\sin^{-1}(\sin(-8))$

i. $\cos^{-1}(\cos(14))$

3. Simplify the expression so it is free of any trig or inverse trig function. Use exact value.

a. $\sin(\arccos(\frac{1}{3}))$

b. $\cos(\arcsin(-\frac{2}{5}))$

c. $\sec(\tan^{-1}(3))$

d. $\tan(\cos^{-1}(\frac{2}{7}))$

e. $\csc(\sin^{-1}(\frac{3}{\sqrt{13}}))$

4. Rewrite the following in terms of x so that the expression is free of any trig or inverse trig function:

a. $\sin(\arccos x)$

b. $\cos(\tan^{-1} x)$

c. $\tan(\sin^{-1} x)$

5. Solve the given equation. If the range for x is indicated, only solve for x over that interval. Otherwise, solve for all possible solutions.

a. $\cos x = \dfrac{\sqrt{2}}{2}$

b. $\sin x = -\dfrac{\sqrt{3}}{2}$

c. $\sin x = -\dfrac{1}{2}$

d. $\tan x = \sqrt{3}$

e. $\cos x = -1$

f. $\sin x = 0$

g. $2\sin x + 1 = 0,\ 0 \leq x \leq 2\pi$

h. $2\cos x - \sqrt{3} = 0,\ 0 \leq x \leq 2\pi$

i. $\cos x = \cot x,\ 0 \leq x \leq 2\pi$

j. $\tan x = -2\sin x,\ 0 \leq x \leq 2\pi$

k. $2\cos^2 x + 3\sin x = 0,\ 0 \leq x \leq 2\pi$

l. $\cos 2x = \sin x$

m. $\sin 2x = 1 + \cos 2x$

n. $\cos 2x = \cos x - 1$