Calculus 12
10-2 Functions of Related Values

1. Express each of the following as a function of its related acute angle and evaluate.

a) $\sin\left(-\frac{7\pi}{6}\right)$

b) $\cos\left(\frac{15\pi}{4}\right)$

c) $\sin(240°)$

d) $\cos(-135°)$

2. Express each of the following as a function of its co-related acute angle and evaluate.

a) $\cos\frac{11}{6}\pi$

b) $\sin\left(-\frac{7\pi}{6}\right)$

c) $\sin(120°)$

d) $\tan(510°)$

3. Simplify.

a) $\cos x + \cos(\pi - x) - \cos(\pi + x) - \cos(-x)$

b) $\tan x + \tan(\pi - x) + \cot\left(\frac{\pi}{2} - x\right) - \tan(2\pi - x)$

c) $\sin(\pi + x) + \cos\left(\frac{\pi}{2} - x\right) + \tan\left(\frac{\pi}{2} + x\right) + \tan\left(\frac{3\pi}{2} - x\right)$

d) $\sin\left(\frac{\pi}{2} + x\right) - \cos\left(\frac{3\pi}{2} - x\right) + \sin\left(\frac{3\pi}{2} - x\right)$

e) $\sin\left(\frac{\pi}{2} - x\right) + \sin(\pi - x) + \sin\left(\frac{3\pi}{2} - x\right) + \sin(2\pi - x)$

4. Find the cosecant, secant, and cotangent of each of the following. Express your answers in terms o cosecant, secant or cotangent of x.

a) $\pi - x$

b) $\frac{\pi}{2} + x$

5. Simplify.

a) $\sin(x - \pi)$

b) $\cos\left(x - \frac{\pi}{2}\right)$

c) $\tan(-x - \pi)$

6. Evaluate.

a) $\sec\left(\pi + \frac{\pi}{3}\right)$

b) $\csc\left(\frac{3\pi}{2} - \frac{\pi}{6}\right)$

c) $\cot\left(\frac{\pi}{2} + \frac{\pi}{3}\right)$

7. Simplify.

a) $\dfrac{\cos(\pi + x)\cos\left(\frac{\pi}{2} + x\right)}{\cos(\pi - x)} - \dfrac{\sin\left(\frac{3\pi}{2} - x\right)}{\sec(\pi + x)}$