

Section 5.4

Problem 1. Find the exact value of each expression.

a) $\cos 15^\circ$

b) $\sin\left(\frac{7\pi}{12}\right)$

c) $\sin\left(\frac{5\pi}{12}\right)$

d) $\sin 255^\circ$

Problem 2. Find the exact value of the expression.

a) $\cos 125^\circ \cos 10^\circ - \sin 125^\circ \sin 10^\circ$

b) $\sin\left(\frac{\pi}{24}\right) \cos\left(\frac{7\pi}{24}\right) + \cos\left(\frac{\pi}{24}\right) \sin\left(\frac{7\pi}{24}\right)$

c) $\frac{\tan(5\pi/12) - \tan(\pi/12)}{1 + \tan(5\pi/12)\tan(\pi/12)}$

Problem 3. Find the exact value of the trigonometric function given that $\sin u = \frac{12}{13}$ and $\cos v = -\frac{4}{5}$, and both u and v are in Quadrant II.

a) $\cos(u - v)$

b) $\sin(v - u)$

Homework: Read section 5.4, do #7, 9, 11, 19, 29, 31, 35, 37, 41, 43, 47

Section 5.5

Problem 1. Verify the following identities.

a) $\sin 2u = 2 \sin u \cos u$

b) $\cos 2u = \cos^2 u - \sin^2 u = 2 \cos^2 u - 1 = 1 - 2 \sin^2 u$

Problem 2. Find the exact solutions of the equation in the interval $[0, 2\pi)$.

a) $\sin 2x - \cos x = 0$

b) $\cos 2x + \cos x = 0$

Problem 3. Let $\cos u = -\frac{3}{4}$, $\frac{\pi}{2} < u < \pi$. Find the exact values of $\sin 2u$ and $\cos 2u$.

Problem 4. Let $\cos u = \frac{4}{5}$, $0 < u < \frac{\pi}{2}$. Find the exact values of $\sin(u/2)$ and $\cos(u/2)$.

Problem 5. Use the half-angle formulas on p. 385 to find the following:

a) $\sin 22.5^\circ$

b) $\cos\left(\frac{7\pi}{12}\right)$

Homework: Read section 5.5, do #7, 15, 21, 27, 33, 35, 37