

Name: _____

Sum and Difference Formulas

Exercise 1: Simplify the expression

1) $\sin\left(x - \frac{\pi}{2}\right)$

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

3) $\sin(x + \pi)$

4) $\cos(x + \pi)$

5) $\tan(x + \pi)$

6) $\tan\left(x - \frac{\pi}{3}\right)$

7) $\cos\left(x + \frac{\pi}{2}\right)$

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

Exercise 2: Simplify: $\frac{\cos(x + y) + \cos(x - y)}{\sin x \cos y}$

Exercise 3: Suppose $\sin a = \frac{4}{5}$ and $\sin b = \frac{5}{13}$, where both a and b are in the first quadrant. Find $\cos(a + b)$

Exercise 4: Find the exact value of each expression:

1) $\sin 50^\circ \cos 10^\circ + \sin 10^\circ \cos 50^\circ$

2) $\cos 95^\circ \cos 35^\circ + \sin 95^\circ \sin 35^\circ$

Exercise 5: If the $\tan x = \frac{-7}{24}$ and $\cot y = \frac{3}{4}$, x is in quadrant II and y is in quadrant III, find each of the following:

1) $\tan(x + y)$

2) $\tan(x - y)$

Exercise 6: Let $\sin x = \frac{3}{5}$ and $\sin y = \frac{5}{13}$ and both angles are in quadrant I, find $\tan(x + y)$.