

Sum & Difference Identities - Sine

$$\sin(A+B) = \sin A \cos B + \cos A \sin B$$

$$\sin(A-B) = \sin A \cos B - \cos A \sin B$$

1. Find the exact value of each expression.

a. $\sin\left(\frac{2\pi}{3} + \frac{3\pi}{4}\right)$

b. $\sin\left(\frac{2\pi}{3}\right) + \sin\left(\frac{3\pi}{4}\right)$

2. Use the sum and difference formulas to find the exact value.

$$\sin 165^\circ$$

3. Use the sum and difference formulas to find the exact value.

$$\sin \frac{13\pi}{12}$$

4. Find the exact value of each trigonometric function, given:

$$\sin u = \frac{4}{5}, \text{ where } 0 < u < \frac{\pi}{2} \text{ and}$$

$$\cos v = -\frac{12}{13}, \text{ where } \frac{\pi}{2} < v < \pi.$$

a. $\sin(u + v)$

b. $\sin(u - v)$