

$\cos(x - y)$ and $\cos(x + y)$

1. The cosine of the difference of two angles may be found using the formula at the right.

$$\cos(x - y) = \cos x \cos y + \sin x \sin y$$

Use this formula to find $\cos(90^\circ - 30^\circ)$.

2. Find $\cos(-y)$.

$$\cos(-y) =$$

3. Fill in the blanks:
- $\sin(30^\circ) =$ _____
- $\sin(-30^\circ) =$ _____
- $\sin(120^\circ) =$ _____
- $\sin(-120^\circ) =$ _____

$$\sin(-y) =$$

4. Derive a formula for $\cos(x + y)$.

$$\cos(x + y) =$$

5. Which of the following is equivalent to $\cos(180 - x)$?

(1) $\sin x$

(2) $-\sin x$

(3) $\cos x$

(4) $-\cos x$

6. If $\sin A = \frac{3}{5}$, $\sin B = \frac{4}{5}$, $0^\circ < A < 90^\circ$, and $90^\circ < B < 180^\circ$, find the value of $\cos(A + B)$.

7. Find the exact value of $\cos 15^\circ$.

8. Find the exact value of $\cos 105^\circ$.