

Sum and Difference Identities

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the exact value of the expression.

1) $\cos(60^\circ + 45^\circ)$ 1) _____
 A) $\frac{\sqrt{2} + 2\sqrt{3}}{4}$ B) $\frac{\sqrt{2} - \sqrt{6}}{4}$ C) $\frac{\sqrt{6} - \sqrt{2}}{4}$ D) $\frac{2\sqrt{2} + \sqrt{6}}{4}$

2) $\cos(45^\circ - 30^\circ)$ 2) _____
 A) $\frac{\sqrt{6} - \sqrt{2}}{4}$ B) $\frac{\sqrt{2} + \sqrt{6}}{2}$ C) $\frac{\sqrt{6} - \sqrt{2}}{2}$ D) $\frac{\sqrt{2} + \sqrt{6}}{4}$

3) $\cos\left(\frac{\pi}{3} + \frac{\pi}{4}\right)$ 3) _____
 A) $\frac{2\sqrt{2} + \sqrt{6}}{4}$ B) $\frac{\sqrt{6} - \sqrt{2}}{4}$ C) $\frac{\sqrt{2} + 2\sqrt{3}}{4}$ D) $\frac{\sqrt{2} - \sqrt{6}}{4}$

4) $\sin 75^\circ$ 4) _____
 A) $\frac{2\sqrt{2} + \sqrt{6}}{4}$ B) $\frac{\sqrt{2} + \sqrt{6}}{4}$ C) $\frac{\sqrt{6} - \sqrt{2}}{4}$ D) $\frac{\sqrt{2} + 2\sqrt{3}}{4}$

Use the given information to find the exact value.

5) $\cos A = \frac{1}{3}$, $0 < A < \frac{\pi}{2}$; $\sin B = -\frac{1}{2}$, $\frac{3\pi}{2} < B < 2\pi$ Find $\cos(A + B)$. 5) _____
 A) $\frac{2\sqrt{6} + 1}{6}$ B) $\frac{\sqrt{3} + 2\sqrt{2}}{6}$ C) $\frac{\sqrt{3} - 2\sqrt{2}}{6}$ D) $\frac{2\sqrt{6} - 1}{6}$

6) $\cos A = \frac{1}{3}$, $0 < A < \frac{\pi}{2}$; $\sin B = -\frac{1}{2}$, $\frac{3\pi}{2} < B < 2\pi$ Find $\sin(A - B)$. 6) _____
 A) $\frac{\sqrt{3} - 2\sqrt{2}}{6}$ B) $\frac{\sqrt{3} + 2\sqrt{2}}{6}$ C) $\frac{2\sqrt{6} + 1}{6}$ D) $\frac{2\sqrt{6} - 1}{6}$

Use the appropriate sum or difference identity to write the given expression as a function of x alone.

7) $\tan(x - \pi)$ 7) _____
 A) $-\tan x$ B) $\frac{1 + \sqrt{3} \tan x}{\sqrt{3} - \tan x}$ C) $\tan x$ D) $\frac{\tan x - \sqrt{3}}{1 + \sqrt{3} \tan x}$

8) $\sin(x - \pi)$ 8) _____
 A) $-\cos x$ B) $\sin x$ C) $-\sin x$ D) $\cos x$

9) $\sin\left(\frac{\pi}{2} - x\right)$ 9) _____
 A) $-\sin x$ B) $\sin x$ C) $\cos x$ D) $-\cos x$

Answer Key

Testname: SUM AND DIFFERENCE IDENTITIES

- 1) B
- 2) D
- 3) D
- 4) B
- 5) B
- 6) C
- 7) C
- 8) C
- 9) C