

Apply compound-angle identities

- 1** Complete the sum/difference identity for this expression

$$\cos(\gamma + \theta)$$

A $= \sin^2(\gamma) - \cos(\gamma)\sin(\theta)$

B $= \cos(\gamma)\cos(\theta) - \sin(\gamma)\sin(\theta)$

- 2** Is this sum/difference identity correct?
 $\cos(\alpha + \theta) = \sin(\alpha)\sin(\theta) - \cos(\alpha)\cos(\theta)$

A

Yes

B

No

- 3** Solve the trigonometric equation for x in the given domain.

$$\cos(x) \cos\left(\frac{\pi}{6}\right) - \sin(x) \sin\left(\frac{\pi}{6}\right) + 2 = 2$$

$$\text{for } 0 \leq x < 2\pi$$

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

A

$$x = \frac{2\pi}{3} \text{ or } x = \frac{5\pi}{3}$$

B

$$x = \frac{\pi}{3} \text{ or } x = \frac{5\pi}{6} \text{ or } x = \frac{4\pi}{3}$$

C

$$x = \frac{\pi}{3}$$

D

$$x = \frac{\pi}{3} \text{ or } x = \frac{4\pi}{3}$$

- 4** Complete the sum/difference identity for this expression

$$\tan(315^\circ - 150^\circ)$$

A $= \frac{\tan(315^\circ) - \tan(150^\circ)}{1 + \tan(315^\circ)\tan(150^\circ)}$

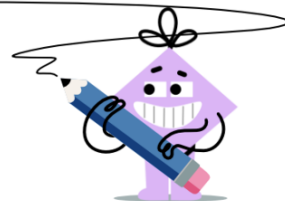
B $= \frac{\cos(315^\circ) + \sin(150^\circ)}{1 - \tan(315^\circ)\tan(150^\circ)}$

- 5** Complete the sum/difference identity for this expression

$$\tan(60^\circ + 45^\circ)$$

A $= \frac{\tan(60^\circ) + \tan(45^\circ)}{1 - \tan(60^\circ)\tan(45^\circ)}$

B $= \frac{\cos(60^\circ) + \sin(45^\circ)}{1 - \tan(60^\circ)\tan(45^\circ)}$

**Apply compound-angle identities****6**Solve the trigonometric equation for x in the given domain.

$$\frac{\tan(x) + \tan\left(\frac{\pi}{6}\right)}{1 - \tan(x)\tan\left(\frac{\pi}{6}\right)} = -1$$
$$\text{for } 0 \leq x < 2\pi$$

A

$$x = \frac{5\pi}{12} \text{ or } x = \frac{17\pi}{12}$$

B

$$x = \frac{7\pi}{12}$$

C

$$x = \frac{7\pi}{12} \text{ or } x = \frac{19\pi}{12}$$

D

$$x = \frac{7\pi}{12} \text{ or } x = \frac{13\pi}{12} \text{ or } x = \frac{19\pi}{12}$$

7Solve the trigonometric equation for x in the given domain.

$$2\left(\sin(x)\cos\left(\frac{\pi}{3}\right) + \cos(x)\sin\left(\frac{\pi}{3}\right)\right) = -1$$
$$\text{for } 0 \leq x < 2\pi$$

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

A

$$x = \frac{\pi}{2} \text{ or } x = \frac{11\pi}{6}$$

B

$$x = \frac{5\pi}{6} \text{ or } x = \frac{3\pi}{2}$$

C

$$x = \frac{\pi}{2} \text{ or } x = \frac{7\pi}{6}$$

D

$$x = \frac{5\pi}{6}$$

8Solve the trigonometric equation for x in the given domain.

$$4\left(\sin(x)\cos\left(\frac{\pi}{6}\right) + \cos(x)\sin\left(\frac{\pi}{6}\right)\right) = 4$$
$$\text{for } 0 \leq x < 2\pi$$

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

A

$$x = \frac{\pi}{3}$$

B

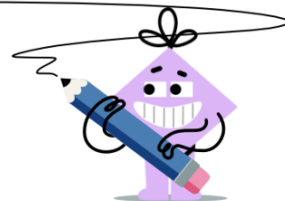
$$x = \frac{5\pi}{3}$$

C

$$x = \frac{4\pi}{3}$$

D

$$x = \frac{\pi}{3} \text{ or } x = \frac{5\pi}{6}$$

**Apply compound-angle identities****9**Solve the trigonometric equation for x in the given domain.

$$\frac{\tan(x) + \tan(\frac{\pi}{4})}{1 - \tan(x)\tan(\frac{\pi}{4})} = \sqrt{3}$$
$$\text{for } 0 \leq x < 2\pi$$

A

$$x = \frac{\pi}{12} \text{ or } x = \frac{13\pi}{12}$$

B

$$x = \frac{11\pi}{12} \text{ or } x = \frac{23\pi}{12}$$

C

$$x = \frac{\pi}{12}$$

D

$$x = \frac{\pi}{12} \text{ or } x = \frac{7\pi}{12} \text{ or } x = \frac{13\pi}{12}$$

10

Complete the sum/difference identity for this expression

$$\cos(210^\circ - 225^\circ)$$

A

$$= \sin(210^\circ)\cos(225^\circ) + \cos^2(210^\circ)$$

B

$$= \cos(210^\circ)\cos(225^\circ) + \sin(210^\circ)\sin(225^\circ)$$

11Solve the trigonometric equation for x in the given domain.

$$\frac{\tan(x) + \tan(\frac{\pi}{3})}{1 - \tan(x)\tan(\frac{\pi}{3})} = \sqrt{3}$$
$$\text{for } 0 \leq x < 2\pi$$

A

$$x = 0 \text{ or } x = \pi$$

B

$$x = 0 \text{ or } x = \frac{\pi}{2} \text{ or } x = \pi$$

C

$$x = 0$$