Trigonometry Identities - Sum/Difference to Identity (Radians)

1 Complete the sum/difference identity for this expression
$$\sin\left(\frac{3\pi}{4} - \frac{7\pi}{4}\right)$$

A $= \sin\left(\frac{3\pi}{4}\right)\cos\left(\frac{7\pi}{4}\right) - \cos\left(\frac{3\pi}{4}\right)\sin\left(\frac{7\pi}{4}\right)$

B $= \sin\left(\frac{3\pi}{4}\right)\cos\left(\frac{7\pi}{4}\right) + \cos^2\left(\frac{3\pi}{4}\right)$

2 Complete the sum/difference identity for this expression
$$\cos\left(\frac{4\pi}{3} + \frac{5\pi}{4}\right)$$

A $= \sin^2\left(\frac{4\pi}{3}\right) - \cos\left(\frac{4\pi}{3}\right)\sin\left(\frac{5\pi}{4}\right)$

B $= \cos\left(\frac{4\pi}{3}\right)\cos\left(\frac{5\pi}{4}\right) - \sin\left(\frac{4\pi}{3}\right)\sin\left(\frac{5\pi}{4}\right)$

3 Complete the sum/difference identity for this expression
$$\cos\left(\frac{5\pi}{4} + \frac{4\pi}{3}\right)$$

A $= \sin\left(\frac{5\pi}{4}\right)\cos\left(\frac{4\pi}{3}\right) + \cos\left(\frac{5\pi}{4}\right)\sin\left(\frac{4\pi}{3}\right)$

B $= \cos\left(\frac{5\pi}{4}\right)\cos\left(\frac{4\pi}{3}\right) - \sin\left(\frac{5\pi}{4}\right)\sin\left(\frac{4\pi}{3}\right)$

4 Complete the sum/difference identity for this expression
$$\cos\left(\frac{11\pi}{6} + \frac{3\pi}{4}\right)$$

A $= \sin\left(\frac{11\pi}{6}\right)\sin\left(\frac{3\pi}{4}\right) - \cos\left(\frac{11\pi}{6}\right)\cos\left(\frac{3\pi}{4}\right)$

B $= \cos\left(\frac{11\pi}{6}\right)\cos\left(\frac{3\pi}{4}\right) - \sin\left(\frac{11\pi}{6}\right)\sin\left(\frac{3\pi}{4}\right)$

5 Complete the sum/difference identity for this expression
$$\sin\left(\frac{5\pi}{3} + \frac{\pi}{3}\right)$$

A $= \sin\left(\frac{5\pi}{3}\right)\cos\left(\frac{\pi}{3}\right) + \cos\left(\frac{5\pi}{3}\right)\sin\left(\frac{\pi}{3}\right)$

B $= \sin^2\left(\frac{5\pi}{3}\right) - \cos\left(\frac{5\pi}{3}\right)\sin\left(\frac{\pi}{3}\right)$

6 Complete the sum/difference identity for this expression
$$\sin\left(\frac{5\pi}{6} + \frac{\pi}{6}\right)$$

A $= \sin\left(\frac{5\pi}{6}\right)\cos\left(\frac{\pi}{6}\right) - \cos\left(\frac{5\pi}{6}\right)\sin\left(\frac{\pi}{6}\right)$

B $= \sin\left(\frac{5\pi}{6}\right)\cos\left(\frac{\pi}{6}\right) + \cos\left(\frac{5\pi}{6}\right)\sin\left(\frac{\pi}{6}\right)$

7 Complete the sum/difference identity for this expression
$$\tan\left(\frac{7\pi}{6} + \frac{3\pi}{4}\right)$$

A $= \dfrac{\tan\left(\frac{7\pi}{6}\right) + \tan\left(\frac{3\pi}{4}\right)}{1 - \tan\left(\frac{7\pi}{6}\right)\tan\left(\frac{3\pi}{4}\right)}$

B $= \dfrac{\cos\left(\frac{7\pi}{6}\right) + \sin\left(\frac{3\pi}{4}\right)}{1 - \tan\left(\frac{7\pi}{6}\right)\tan\left(\frac{3\pi}{4}\right)}$

8 Complete the sum/difference identity for this expression
$$\cos\left(\frac{3\pi}{4} - \frac{11\pi}{6}\right)$$

A $= \sin\left(\frac{3\pi}{4}\right)\cos\left(\frac{11\pi}{6}\right) + \cos^2\left(\frac{3\pi}{4}\right)$

B $= \cos\left(\frac{3\pi}{4}\right)\cos\left(\frac{11\pi}{6}\right) + \sin\left(\frac{3\pi}{4}\right)\sin\left(\frac{11\pi}{6}\right)$