Trigonometry Identities - Product to Sum to Identity (Radians)

1 Complete the product to sum identity for this expression
$$\cos(\frac{\pi}{4})\cos(\frac{5\pi}{3})$$

A
$$= \frac{1}{2}\left[\cos(\frac{\pi}{4} + \frac{5\pi}{3}) + \cos^2(\frac{\pi}{4} + \frac{5\pi}{3})\right]$$

B
$$= \frac{1}{2}\left[\cos(\frac{\pi}{4} - \frac{5\pi}{3}) + \cos(\frac{\pi}{4} + \frac{5\pi}{3})\right]$$

2 Complete the product to sum identity for this expression
$$\cos(\frac{\pi}{6})\sin(\frac{5\pi}{4})$$

A
$$= \frac{1}{2}\left[\sin(\frac{\pi}{6} + \frac{5\pi}{4}) + \sin(\frac{\pi}{6} - \frac{5\pi}{4})\right]$$

B
$$= \frac{1}{2}\left[\sin(\frac{\pi}{6} + \frac{5\pi}{4}) - \sin(\frac{\pi}{6} - \frac{5\pi}{4})\right]$$

3 Complete the product to sum identity for this expression
$$\cos(\frac{2\pi}{3})\sin(\frac{5\pi}{6})$$

A
$$= \frac{1}{2}\left[\sin(\frac{2\pi}{3} + \frac{5\pi}{6}) - \sin(\frac{2\pi}{3} - \frac{5\pi}{6})\right]$$

B
$$= \frac{1}{2}\left[\sin(\frac{2\pi}{3} + \frac{5\pi}{6}) + \sin(\frac{2\pi}{3} - \frac{5\pi}{6})\right]$$

4 Complete the product to sum identity for this expression
$$\cos(\frac{7\pi}{6})\sin(\frac{\pi}{4})$$

A
$$= \frac{1}{2}\left[\sin(\frac{7\pi}{6} + \frac{\pi}{4}) + \sin(\frac{7\pi}{6} - \frac{\pi}{4})\right]$$

B
$$= \frac{1}{2}\left[\sin(\frac{7\pi}{6} + \frac{\pi}{4}) - \sin(\frac{7\pi}{6} - \frac{\pi}{4})\right]$$

5 Complete the product to sum identity for this expression
$$\sin(\frac{5\pi}{6})\sin(\frac{\pi}{4})$$

A
$$= \frac{1}{2}\left[\cos(\frac{5\pi}{6} + \frac{\pi}{4}) + \sin(\frac{5\pi}{6} + \frac{\pi}{4})\right]$$

B
$$= \frac{1}{2}\left[\cos(\frac{5\pi}{6} - \frac{\pi}{4}) - \cos(\frac{5\pi}{6} + \frac{\pi}{4})\right]$$

6 Complete the product to sum identity for this expression
$$\sin(\frac{7\pi}{4})\cos(\frac{2\pi}{3})$$

A
$$= \frac{1}{2}\left[\cos(\frac{7\pi}{4} + \frac{2\pi}{3}) + \sin(\frac{7\pi}{4} + \frac{2\pi}{3})\right]$$

B
$$= \frac{1}{2}\left[\sin(\frac{7\pi}{4} + \frac{2\pi}{3}) + \sin(\frac{7\pi}{4} - \frac{2\pi}{3})\right]$$

7 Complete the product to sum identity for this expression
$$\sin(\frac{5\pi}{4})\sin(\frac{11\pi}{6})$$

A
$$= \frac{1}{2}\left[\cos(\frac{5\pi}{4} - \frac{11\pi}{6}) - \cos(\frac{5\pi}{4} + \frac{11\pi}{6})\right]$$

B
$$= \frac{1}{2}\left[\cos(\frac{5\pi}{4} + \frac{11\pi}{6}) + \sin(\frac{5\pi}{4} + \frac{11\pi}{6})\right]$$

8 Complete the product to sum identity for this expression
$$\cos(\frac{5\pi}{6})\cos(\frac{5\pi}{4})$$

A
$$= \frac{1}{2}\left[\sin(\frac{5\pi}{6} + \frac{5\pi}{4}) + \sin(\frac{5\pi}{6} - \frac{5\pi}{4})\right]$$

B
$$= \frac{1}{2}\left[\cos(\frac{5\pi}{6} - \frac{5\pi}{4}) + \cos(\frac{5\pi}{6} + \frac{5\pi}{4})\right]$$