Product-to-Sum and Sum-to-Product formulas

1. Find the exact value of each expression
(Similar to p.242 #1-6)

$$\cos 112.5^\circ \cdot \cos 22.5^\circ$$

2. Find the exact value of each expression
(Similar to p.242 #1-6)

$$\sin\frac{7\pi}{12} - \sin\frac{\pi}{12}$$

3. Express each product as a sum containing only sines or only cosines
(Similar to p.242 #7-16)

$$\cos(6\theta)\cos(2\theta)$$

4. Express each product as a sum containing only sines or only cosines
(Similar to p.242 #7-16)

$$\sin\frac{3\theta}{2}\cos\frac{7\theta}{2}$$

5. Express each sum or difference as a product of sines and/or cosines
(Similar to p.242 #17-24)

$$\sin(6\theta) + \sin(2\theta)$$

6. Establish the identity
(Similar to p.242 #25-42)

$$\frac{\cos 3x + \cos x}{\sin 3x - \sin x} = \cot x$$

7. Solve each equation on the interval
$0 \leq \theta < 2\pi$
(Similar to p.243 #43-46)

$$\sin 5x + \sin 3x = 0$$