1 If \( \alpha \) and \( \beta \) are third-quadrant angles such that \( \cos \alpha = -\frac{2}{3} \) and \( \cos \beta = -\frac{3}{5} \), find (a) \( \sin(\alpha - \beta) \), (b) \( \cos(\alpha - \beta) \) and (c) the quadrant containing \( \alpha - \beta \).

2 Find the exact values of \( \tan \frac{7\pi}{12} \) and \( \sin \frac{11\pi}{12} \).

3 Verify the identities
   \[
   (\sin t + \cos t)^2 = 1 + \sin(2t), \quad \cos^4 x - \sin^4 x = \cos 2x.
   \]

4 Find the solutions of the equation that are in the interval \([0, 2\pi)\).
   \[
   \cos t + \cos 2t = 0.
   \]

5 Find the exact values of \( \cos^{-1} \left[ \cos \left( -\frac{\pi}{4} \right) \right] \) and \( \sin^{-1} \left[ \sin \left( -\frac{\pi}{4} \right) \right] \).

6 Find the exact values of
   \[
   \tan \left[ \cos^{-1} \left( -\frac{1}{2} \right) \right], \quad \sin \left[ 2\cos^{-1} \left( -\frac{3}{5} \right) \right], \quad \cos \left[ \frac{5\pi}{4} - \sin^{-1} \left( -\frac{2}{3} \right) \right]
   \]

7 Given \( \alpha = 32^\circ \), \( c = 500 \) and \( a = 280 \), solve \( \Delta ABC \).

8 A surveyor notes that the direction from point A to point B is \( S63^\circ W \) and the direction from point A to point C is \( S38^\circ W \). The distance from A to B is 239 yards, and the distance from B to C is 374 yards. Approximate the distance from A to C.

9 Given \( a = 2, b = 3, c = 4 \), solve \( \Delta ABC \), and find the area of \( \Delta ABC \).

10 A ship leaves port at 1:00 P.M. and travels \( S35^\circ E \) at the rate of 24 mi/hr. Another ship leaves the same port at 1:30 P.M. and travels \( S20^\circ W \) at 18 mi/hr. Approximately how far apart are the ships at 3:00 P.M.?