Additional Problems Assignment 10

1. Find the exact value of the following (doesn't involve decimals):

   (a) $\sin(225°)$

   (b) $\cos(75°)$
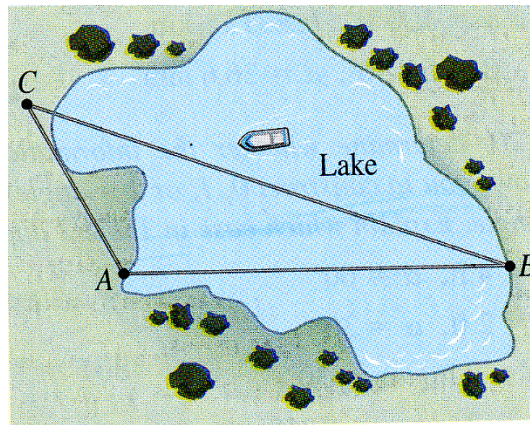
   (c) $\tan(225°)$

2. Find the exact value of this:

   (a) $\sin(155°)\cos(25°) + \sin(25°)\cos(155°)$

   (b) $\cos(\frac{7\pi}{12})\cos(\frac{3\pi}{12}) - \sin(\frac{7\pi}{12})\sin(\frac{3\pi}{12})$

3. An underwater telephone cable is to cross a shallow lake from point A to point B. Stakes are located at A, B and C. Distance AC is measured to be 112m $\angle CAB$ to be 118.4°, and $\angle ABC$ to be 19.2°. Find the distance AB.
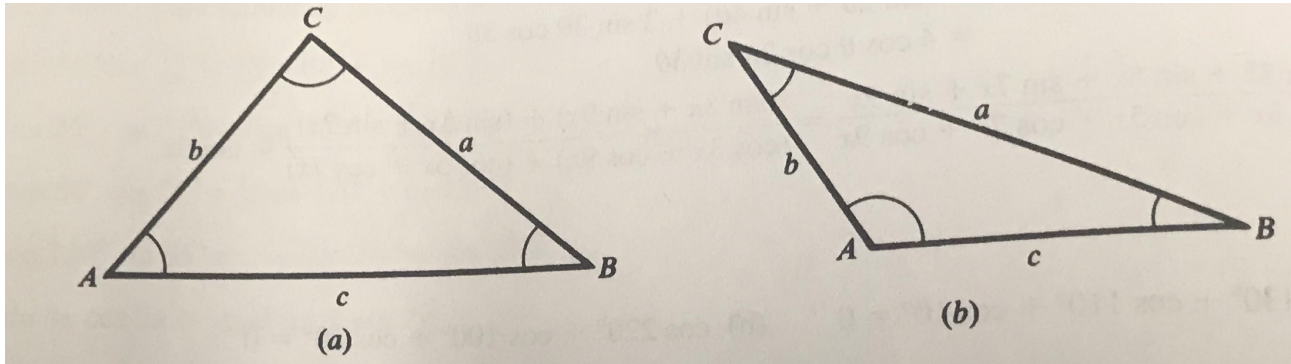
4. To estimate the length CB of the lake in the figure that follows, a surveyor measures AB and AC to 89m and 75m, respectively, and $\angle CAB$ to be 95°. Find the approximate length of the lake.
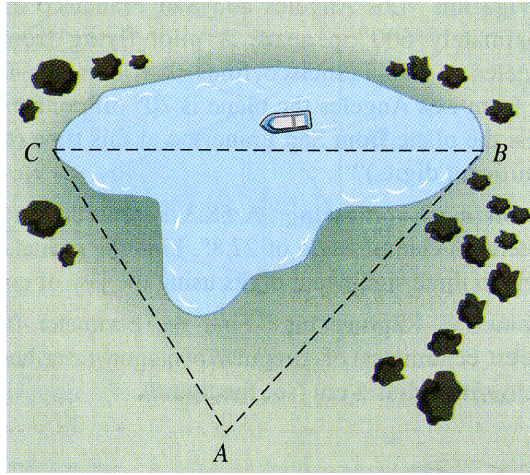
5. Find the **exact** value of $\sin(2\theta)$, $\cos(2\theta)$, and $\tan(2\theta)$, given:

   (a) $\sin(\theta) = 3/5$ with $0 \le \theta \le \frac{\pi}{2}$.

   (b) $\sin(\theta) = 3/5$ with $\frac{\pi}{2} \le \theta \le \pi$.

6. Considered a general triangle labeled as below (note it can either look like (a) or (b)).

(a)

(b)

(a) Suppose $a = 17, c = 14$, and $B = 30°$ find b.

(b) Suppose $b = 17, c = 12$, and $A = 24°$ find B.

(c) Suppose $c = 189, a = 150$, and $C = 85°$ find A.

(d) $a = 6.34, b = 7.30, c = 9.98$ find A.

7. Verify the following identity:

$$\tan(\alpha - \beta) = \frac{\tan(\alpha) - \tan(\beta)}{1 + \tan(\alpha)\tan(\beta)}$$