Homework 11, Graded Problem

A traveler at Point $A$ on the side of a round lake wishes to reach Point $C$ on the other side of the lake. (See figure at right.) She plans to row a boat directly from Point $A$ to Point $B$ and then walk clockwise along the lake shore to Point $C$. The lake is 4 miles in diameter. If she can row at 2 mi/hr and walk at 4 mi/hr, what angle $\theta$ will get her to Point $C$ in the least amount of time?

1. Name the quantity that is to be minimized or maximized.

2. Write it as a function.

3. State the domain of the function.

4. Graph the function on your stated domain.

5. Verify you have exactly located the minimum or maximum value.

6. Answer the question.

[Hint: Here are some geometry facts about inscribed angles and triangles.]