

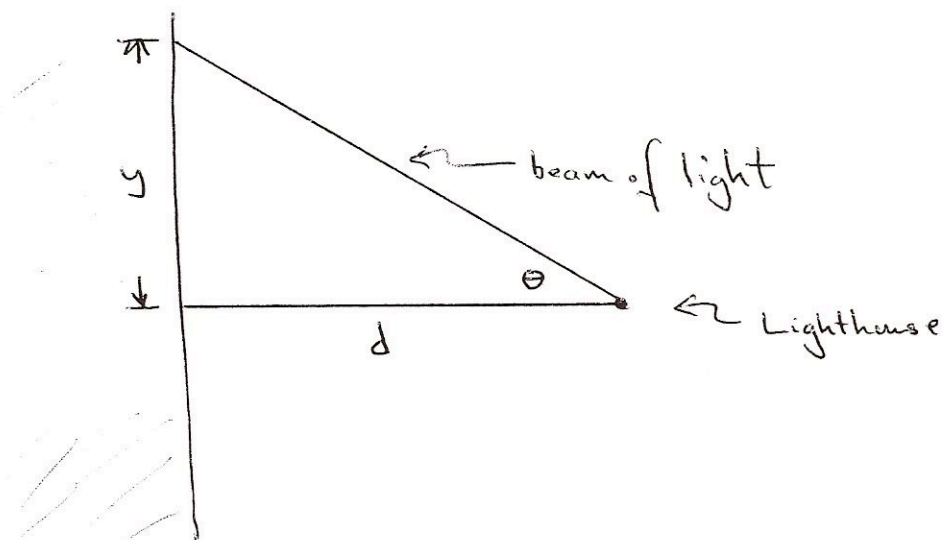
NAME: _____

HOMEWORK FOR WORKSHEET 10

MATH 1300

DUE March 21, 2008

1. The light of an offshore lighthouse, as drawn below, is rotating at a constant rate.



Show that, as the beam of light moves down the shoreline, it moves most slowly at the point on the shore directly opposite the lighthouse. (Hint: Find an equation relating $\frac{d\theta}{dt}$ and $\frac{dy}{dt}$ and use it to minimize $\frac{dy}{dt}$.)

2. (Problem 39 from text, page 320) A drainage channel is to be made so that its cross section is a trapezoid with equally sloping sides. If the sides and bottom all have a length of 5 feet, how should the angle θ , with $0 \leq \theta \leq \pi/2$ be chosen to yield the greatest cross-sectional area of the channel?

