Mathematics 1100Y – Calculus I: Calculus of one variable
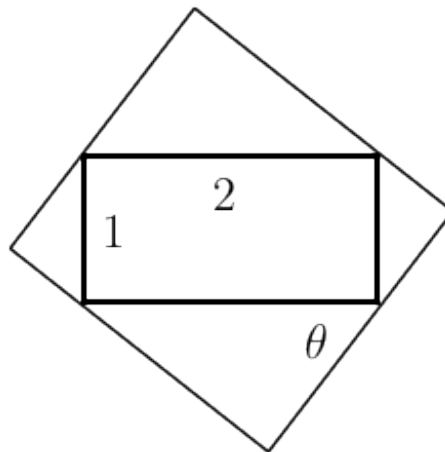
TRENT UNIVERSITY, Summer 2010

Assignment #2
Rectangular Surroundings
Due on Wednesday, 26 May, 2010.

Suppose we are given a 2×1 rectangle and draw another rectangle whose sides each touch a corner of the given rectangle. (That is, the new rectangle *circumscribes* the given one.)

1. What is the maximum possible area of the new rectangle? *[10]*

Hint: Take the angle one of the sides of the new rectangle makes with one of the sides of the given rectangle, such as the angle θ in the diagram. What are the possible values of this angle? Work out the lengths of the sides of the new rectangle in terms of this angle and the dimensions of the given rectangle. Now apply max/min technology . . .

Problems

Problems worthy
    of attack
prove their worth
    by hitting back.

A *Grook* by *Piet Hein.*