

Problem Set 4 Calculus 1 Due 7/17/06

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 5 points. For full credit indicate clearly how you reached your answer. All work must be legible and submitted on clean paper without ragged edges.

1. There are lots of lines passing through the point $(3,5)$, and many of them cut off a triangular region from the first quadrant. Find the one for which the triangle has the largest area.
2. Suppose that a homeowner needs to have a pipeline built from her neighborhood well to her house. The well is located 600 feet down the road from her house, and then 100 feet off perpendicular to the road. It costs \$15 per foot to install pipeline along the road, and \$25 per foot to install pipeline off the road. The homeowner plans to run the pipeline x feet along the road from her house, then along a diagonal line from there to the well. Find the arrangement which minimizes the total cost of the pipeline.
3. Do #12 in §4.7.
4. Do #32 in §4.7.