

3. A Norman window is constructed by adjoining a semicircle to the top of an ordinary rectangular window. Find the dimensions of a Norman window of maximum area if the total perimeter is 16 feet.

4. A rectangle is bounded by the x-axis and the semicircle $y = \sqrt{25 - x^2}$. What length and width should the rectangle have so that its area is a maximum?
5. A man is in a boat 2 miles from the nearest point on the coast. He is to go to a point Q 3 miles down the coast and 1 mile inland. If he can row at 2 miles per hour and walk at 4 miles per hour, toward what point on the coast should he row in order to reach point Q in the least time?

7. Analyze the graph of $f(x) = \frac{x}{\sqrt{x^2 + 2}}$