1. Find the absolute maximum and minimum values of \( f(x) = x^4 - 4x^3 + 4x^2 \) on the interval \([1, 4]\).

2. A box with an open top is to be made by cutting small congruent squares from the corners of a 12 inch by 12 inch piece of cardboard and bending up the sides. How large should the corner squares be to make the box hold as much as possible?

3. A farmer has 2400 ft of fencing and wants to fence off a rectangular field that borders a straight river. He needs no fence along the river. What are the dimensions of the field that has the largest area?

4. You are asked to design a one-liter can shaped like a right circular cylinder that uses the least amount of material. What dimensions should you use? Note that if the radius of the can, \( r \), and the height of the can, \( h \), are measured in centimeters, then the volume of the can in cubic centimeters is \( \pi r^2 h = 1000 \) (since 1 liter = 1000 cm\(^3\)).

5. The top and bottom margins of a poster are each 6 cm and the side margins are each 4 cm. If the area of the printed material on the poster is fixed at 384 cm\(^2\), find the dimensions of the poster with the smallest area.