

**Problem 1.** (4 points) Compute  $\lim_{x \rightarrow 0} \frac{\sin^2 x}{x^2}$ .

**Problem 2.** (6 points) *A farmer wants to fence an area of 1.5 million square feet in a rectangular field and then divide it in half with a fence parallel to one of the sides of the rectangle. How can he do this so as to minimize the cost of the fence?*