

Instructions: We encourage you to work with others in your assigned group on this quiz. You should write your solution neatly using complete sentences that incorporate all symbolic mathematical expressions into the grammatical structure. Include enough detail to allow a fellow student to reconstruct your work, but you need not show every algebraic or arithmetic step. It is important that you do your own writing, even if you have worked out the details with other people. All graphs should be done carefully on graph paper or drawn by a computer. This quiz is due at the beginning of class on Friday, March 23.

1. *This is the infamous dreaded resistor cube problem.*

(a) Section 21.3 problem 5, page 734.

(b) Section 21.3 problem 6, page 734.

2. A flat circular plate has the shape of the region $x^2 + y^2 \leq 1$. The plate, including the boundary, is heated so the temperature at the point (x, y) is $T(x, y) = x^2 + 2y^2 - x$.

(a) Does this function have a global maximum or global minimum? Explain. (2 points)

(b) Find any global extremizers and extrema. (8 points)