On your Marks: The county is revising their estimates of drill depths for new water wells. Their new guidelines need to specify the maximum and minimum drilling depths needed to reach the water table. You have been hired to develop the process to ensure the depths are accurate. Your surface represents the depth needed to reach the water table (1 vertical inch is 100 feet) for the 100 mile by 100 mile county.

Get Set: Suppose you knew the equation for your surface, that is, suppose you knew the function describing the depth of the water table. Develop a method for finding the maximum and minimum values of the depth from this equation.

Go: Mark every point found by your method on your surface. Is it missing any important locations?

Challenge: Can you find a way to determine whether the points you found provide a local maximum or minimum for the function? Explain.

Challenge: Can you develop an alternate method based only on contour maps?