MATH 203 Calculus III
Homework 10

Basic Information

This assignment is due on Gradescope by **3 PM on Friday, October 11**.

Make sure you understand MHC honor code and have carefully read and understood the additional information on the class syllabus. I am happy to discuss any questions or concerns you have!

Since this is a 200-level mathematics course, quite a few homework questions will ask you to explain your reasoning or process for solving a problem. Whenever possible, write your explanations in complete sentences and write your answers as if you were explaining to a peer in the class.

The homework problems will be graded anonymously so please do not put your name or other identifying information on the pages.

Turn In Problems

- 12.5: 30
- 12.6: 12, 18, 20, 24
- 12.8: 6
- #7. Suppose $u = f(w, x)$, and $w = h(r, s, t)$, and $x = p(r, s, t)$, and $r = F(z)$ and $s = G(z)$ and $g = H(z)$. What is the chain rule formula for $\frac{du}{dz}$?

- #8. For the contour map in Figure 1 (on the next page) draw the curves of steepest ascent starting at P and Q.
- #9. The contour map in Figure 2 (on the next page) shows the average annual snowfall (in inches) near Lake Michigan. Estimate the value of the directional derivative of this snowfall function at Muskegon in the direction of Ludington. What are the units?

Additional Problems (to do on your own, not to turn in)

- 12.5: 29
- 12.6: 11, 17, 21, 23
- 12.8: 5

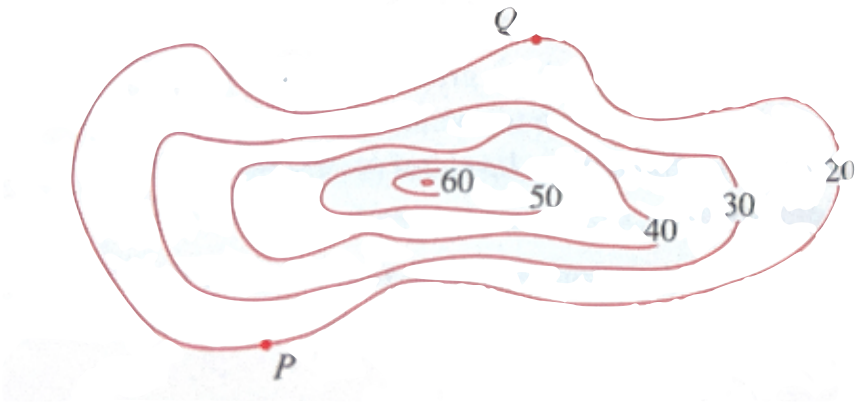

Figure 1 (for problem #8)

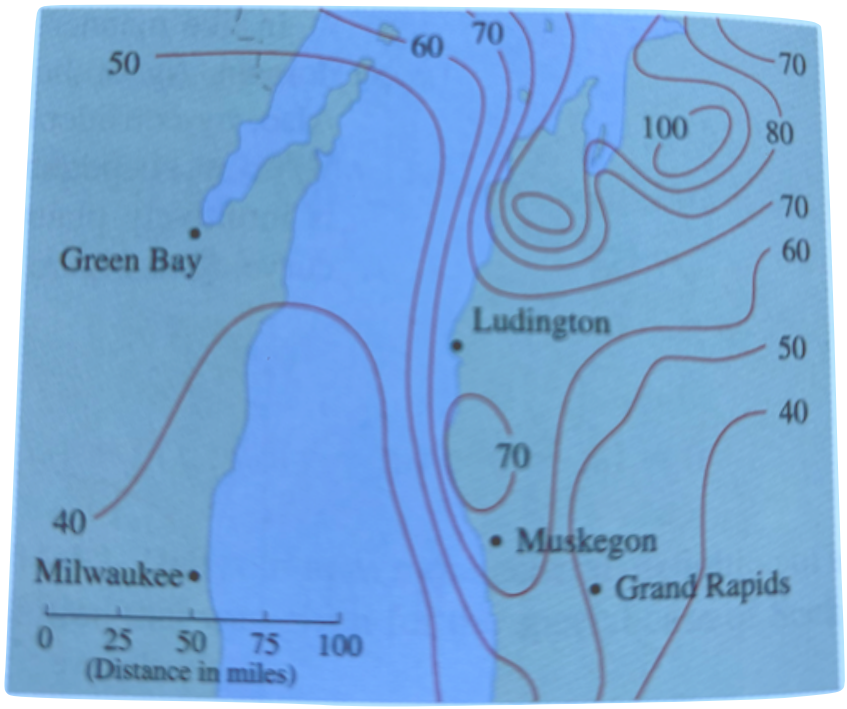

Figure 2 (for problem #9)