Assignment Due: Thursday, October 10, 2019, 11:59pm

Textbook Reading: Sections: 14.2, 14.3, 14.4.

Make notes in your study journal if you encounter any difficulty with understanding this material and seek assistance at the Calculus Workshop (CW).

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1) Calc3 Online

Login in to WebAssign, and complete all Assignments for **HW-4**. It is expected that you work through the problems in your study journal before entering the answers online — your saved written work is your study material for the exams.

- Section 14.2: 9, 13, 21, 29, 31, 37, 38.
- Section 14.3: 5, 7, 11, 17, 31, 42, 47, 52.
- Section 14.4: 1, 6, 21, 25, 27, 31, 38.

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2) Instructor's Questions

2a) Consider the functions

$$f(x,y) = \sin(x^2 - y^2)\,,$$

and

$$g(x,y) = \ln\sqrt{x^2+y^2}\,, \quad \text{with } (x,y) \neq 0\,.$$

Check whether f, g are solutions to the partial differential equation

$$u_{xx} + u_{yy} = 0\,.$$

2b) Consider the surface Σ given by

$$z = \sin(xy) + y^2\,.$$

- Find the point P on Σ with $x = 1$ and $y = \pi$.
- Find the equation for the tangent plane to Σ passing through P.
- Use the differential $\mathrm{d}z$ at P to find an approximate value for $z(0.99, \pi + 0.02)$.