Math 60
HW 6
Tuesday, May 24, 2016

4.1.{9, 10, 20, 28, 34}, 4.2.{6, 12, 22a}

Colley 4.1.9 In Exercises 8-15, find the first- and second-order Taylor polynomials for the given function f at the given point $\mathbf{a}$.

$$f(x,y) = 1/(x^2 + y^2 + 1), \mathbf{a} = (1, -1)$$

■

Colley 4.1.10 In Exercises 8-15, find the first- and second-order Taylor polynomials for the given function f at the given point $\mathbf{a}$.

$$f(x, y) = e^{2x+y}, \mathbf{a} = (0, 0)$$

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Colley 4.1.20 In Exercises 16-20, calculate the Hessian matrix $Hf(\mathbf{a})$ for the indicated function f at the indicated point $\mathbf{a}$.

$$f(x,y,z) = e^{2x-3y}\sin 5z, \mathbf{a} = (0,0,0)$$

■

Colley 4.1.28 Determine the total differential of the functions given in Exercises 28-32.

$$f(x, y) = x^2y^3$$

■

Colley 4.1.34 Near the point $(1, -2, 1)$, is the function $g(x, y, z) = x^3 - 2xy + x^2 z + 7z$ most sensitive to changes in x, y, or z?

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Colley 4.2.6 In Exercises 3-20, identify and determine the nature of the critical points of the given functions.

$$f(x, y) = y^4 - 2xy^2 + x^3 - x$$

■

Colley 4.2.12 In Exercises 3-20, identify and determine the nature of the critical points of the given functions.

$$f(x,y) = e^{-x}(x^2 + 3y^2)$$

■

Colley 4.2.22a

(a) Under what conditions on the constant k will the function

$$f(x, y) = kx^2 - 2xy + ky^2$$

have a nondegenerate local minimum at $(0, 0)$? What about a local maximum?

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