HW 6 — Due May 2	4, 2016
Problem 4 1 9	

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Box #\_\_\_\_\_\_Math 60

Find the first- and second-order Taylor polynomials for

$$f(x,y) = \frac{1}{x^2 + y^2 + 1}$$

at 
$$a = (1, -1)$$
.

HW 6 —	Due	May	24,	2016
Problem	4.1.1	0		

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Box #\_\_\_\_\_\_Math 60

Find the first- and second-order Taylor polynomials for

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

at 
$$\mathbf{a} = (0, 0)$$
.

HW 6 —	Due May	7 24,	2016
Problem	4.1.20		

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Box #\_\_\_\_\_\_Math 60

Calculate the Hessian matrix  $Hf(\mathbf{a})$  for

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

at 
$$\mathbf{a} = (0, 0, 0)$$
.

HW 6 —	Due	May	24,	2016
Problem	4.1.2	8		

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Box #\_\_\_\_\_\_Math 60

Determine the total differential of

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

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Box #\_\_\_\_\_\_Math 60

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

HW 6 — Due May 24,	2016
Problem 4.2.6	

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Box #\_\_\_\_\_\_Math 60

Identify and determine the nature of the critical points of

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

HW 6 —	Due Ma	ıy 24,	2016
Problem	4.2.12	•	

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Box #\_\_\_\_\_\_Math 60

Identify and determine the nature of the critical points of

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

HW 6 —	Due May	24,	2016
Problem	4 2 22a		

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Box #\_\_\_\_\_\_Math 60

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?