Honors Brief Calculus   Unit 17 Groupwork   Name_____

1. Find $f(1, -3)$ for $f(x, y) = 3x^2y - x^2 + y^2$

2. Find f_y for $f(x, y) = 3x^2y - x^2 + y^2$

3. Find f_{xx} for $f(x, y) = x \ln y + y^2 e^x$

4. Find all local maxima, local minima, and saddle points for the surface:
    a. $f(x, y) = xy - 6x - x^2 - y^2$

5. Find all local maxima, local minima, and saddle points for the surface:
    a. $f(x, y) = x^2 + 2x + y^2 + 4y + 10$

6. Find all local maxima, local minima, and saddle points for the surface:
    a. $f(x, y) = xy$

7. Use the method of Lagrange multipliers to find the maximum value of
$z = f(x, y) = 5x^2 - 3y^2 + xy$ subject to the constraint $g(x, y) = 2x - y - 20 = 0$.

8. Use the method of Lagrange multipliers to find the minimum value of $z = f(x, y) = x^2 + y^2$
subject to the constraint $g(x, y) = 2x + y - 4 = 0$.